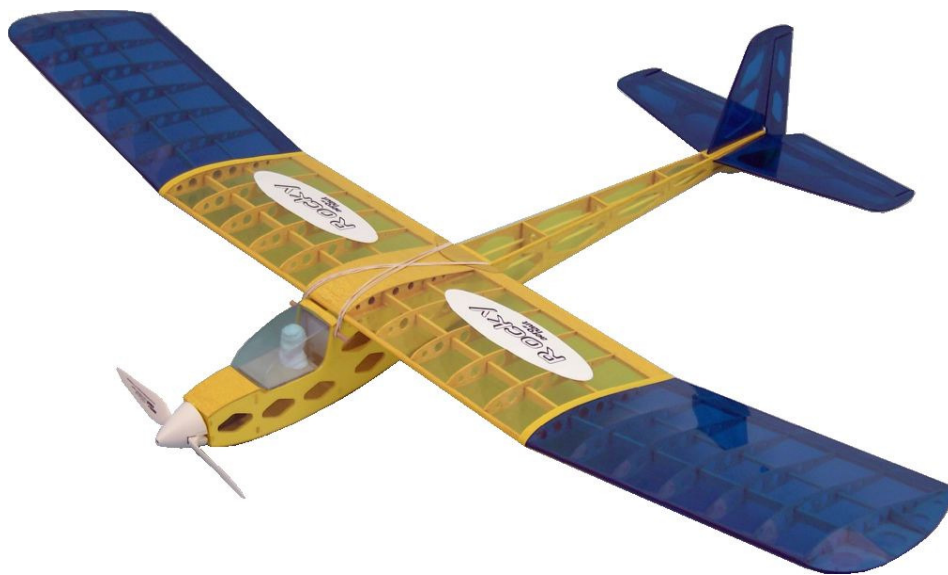


## Building instructions

### Rocky RC electric model



Order No. 1350/00



#### Specification:

Wingspan:	approx. 1100 mm
Length:	approx. 760 mm
Wing area:	approx. 18.15 dm <sup>2</sup>
All-up weight:	approx. 550 g
Motor:	400 size
Flight battery:	7 NiCd / NiMH cells, or 2 LiPo cells

#### RC functions:

Elevator  
Rudder  
Throttle

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## Introduction

The "Rocky" electric-powered glider is produced using modern CNC technology. The individual components are manufactured so accurately that all the parts fit together perfectly. Very little work is required to complete the model.

## Parts List

- 1.) Fuselage: balsa / plywood construction, factory-assembled, with pre-fitted "snake" sleeves
- 2.) Wing: three-part, balsa / spruce construction, factory-assembled
- 3.) Tailplane and elevator: balsa construction, factory-assembled
- 4.) Fin and rudder: balsa construction, factory-assembled
- 5.) Tailskid: machine-cut, ready to fit
- 6.) Elevator and rudder pushrods: 0.8 mm Ø spring steel wire, ready made
- 7.) Retaining dowels: 4 mm Ø beech
- 8.) Canopy: vacuum-moulded, ready made
- 9.) Canopy base plate: plywood / GRP, with GRP retainer, ready made
- 10.) Horns: plastic, ready made
- 11.) M2 pushrod connectors with metal washers and nuts, ready made
- 12.) Reduced-scale plan, paper
- 13.) Building instructions, paper
- 14.) Decal sheet, ready made

## Accessories required to build the model

Building board (e.g. 16 mm blockboard), balsa knife, ruler, straight edge, white glue, screwdriver, 5-minute epoxy, abrasive paper, pins, clothes pegs, paper masking tape, covering material.

## Recommended RC equipment

- 1.) Two micro-servos (approx. 9 g)
- 2.) Micro-receiver (min. four-channel)

## Recommended power system

- 1.) 400-size 7.2 V electric motor, (e.g. "Race 400", Order No. 7000/40)
- 2.) Speed controller, approx. 20 A (e.g. "Multi 20", Order No. 7019/71)
- 3.) Flight battery (7 NiCd / NiMH cells or 2 LiPo cells)
- 4.) 6 x 3" folding propeller (e.g. 6 x 3" with spinner, Order No. 7235/05)

## The wing

- The wing is of classic built-up construction, and all you have to do is glue the three panels together. The correct dihedral angles are built-in as standard. The tip panels have to be packed up by 75 mm (see plan).
- Lay the wing centre section flat on the building board and pin it down to prevent it shifting. Slip a small piece of clear plastic film under the outboard ribs to prevent the structure becoming stuck to the building board.
- Offer up the tip panels to the centre section and clamp the parts together using clothes pegs. Check that the tip panels are not twisted relative to the centre section: the rib shapes must line up exactly. Glue the panels together using epoxy, carefully wiping away any excess that is squeezed out.
- Allow the glue to cure fully (!), then remove the wing from the building board and remove any hardened epoxy at the joint line using a sharp balsa knife.
- Carefully sand the joint areas smooth.

## The fuselage

- The fuselage is supplied as a bare, finished structure. All you have to do is attach the tailplane and fin.
- Remove the elevators from the tailplane and place them to one side for the moment.
- Carefully slide the tailplane through the slots in the tail end of the fuselage from the side. If it jams, sand the slot slightly wider using fine abrasive paper.
- Set the tailplane exactly central. Sight along the fuselage from the nose to check whether the tailplane is horizontal. Take your time over this, and check twice if you are not quite sure (*see plan*).
- When you are satisfied, glue the tailplane in place permanently using thin cyano-acrylate glue ("cyano"): simply dribble a few drops along the joint lines with the fuselage.
- Remove the rudder from the fin and place it to one side for the moment.
- Slide the fin into the vertical slot from above. If it is excessively tight, sand the slot slightly wider using fine abrasive paper.
- Check that the fin is at right-angles to the tailplane (*see plan*).
- The fin can now be glued in place permanently with cyano, using the same method as described for the tailplane.
- Glue the tailskid to the fuselage.
- The control surfaces are not re-attached until the model has been covered.

## The canopy

- The canopy is removable, so that you can easily swap batteries at the flying field. The vacuum-moulded plastic canopy should now be glued to the plywood base plate. The assembly can then be removed and replaced easily using the GRP strip retainer.

- Carefully cut out the canopy along the marked line, using a small pair of scissors. A pair of nail scissors works well, but special modelling Lexan shears with curved blades are even better.
- Sand the cut edges smooth using fine abrasive paper. Offer up the canopy assembly to the fuselage recess, and trim it to obtain a neat fit. Take your time over this; a poorly fitting canopy always looks awful.
- Cover the fuselage recess with cling-film, and fit the canopy floor in the recess (*see plan*).
- Glue the canopy to the frame using special plastic cement. An alternative is to use contact cement, used wet-on-wet. In either case, tape the canopy to the base plate until the glue has hardened thoroughly (!).

### Covering

- We recommend either translucent or solid-colour iron-on film for covering the model. If you have never used these materials before, it is best to ask an experienced modeller to help you, in order to ensure a good result.
- Carefully remove all traces of dust from the model's components. Take care not to distort the components when applying the covering film.
- Apply the iron-on film as described in the instructions supplied by the film manufacturer.
- We recommend using a darker colour on the tip panels than on the centre section, as the contrast makes it easier to recognise the model's attitude in the air.
- Finally attach the control surfaces to the tailplane and fin using strips of adhesive tape as hinges. Ensure that they move freely to both sides of centre.
- Glue the dowels in the holes in the fuselage, projecting equally on either side. They are used to secure the wing retaining bands.

### The motor

- The motor bulkhead is pre-drilled to suit most standard 400-size electric motors. Ensure that the motor you intend to use is fitted with adequate interference suppressors. Note that the motor bulkhead is installed with 3° downthrust and 0° sidethrust as standard; these values have proved correct over many test-flights.
- Connect the motor to the speed controller, taking care to maintain correct polarity. Check the direction of rotation of the shaft before installing the motor. If you can't see the motor shaft spinning, drill a central hole in a small piece of wood and press it on the output shaft. **Don't fit the propeller at this stage - injury hazard!**
- Now fit the motor from the inside and screw it to the motor bulkhead from the front. Tighten the screws firmly, but not to the point where they compress the wood.
- Assemble and fit the folding propeller according to the instructions supplied with it.

### The radio control system

- Install the servos in the fuselage in the rear of the area below the wing. The opening in the servo plate is designed for current 9 g servos. Secure the servos using the fixings supplied with them.
- The steel pushrods supplied for the control surface linkages feature a Z-bend at one end; the pre-formed end should be at the tail.
- First fit the horn on the wire pushrod, then slip the rod into the snake outer sleeve from the tail, and glue the horn to the control surface exactly in line with the snake sleeve (*see plan*). You can make the job easier by marking the proper horn position with a ruler beforehand.
- Connect the steel pushrods to the servo output discs using the pushrod connectors (*see plan*). Check that the linkages move smoothly to and fro.
- Install the receiver in the fuselage in the front of the area under the wing, right at the bottom. Pack foam round the unit after connecting the servos and the speed controller to it. Refer to the operating instructions supplied by the RC system manufacturer at this stage.
- The model can now be assembled completely. Secure the wing with four rubber bands: two crossed over diagonally, two from front to back.
- Check and set the Centre of Gravity (**53 mm from the root leading edge: *see plan***). When you have found the optimum position, fix the flight battery in position with Velcro (hook-and-loop) tape.

### The settings

- Switch on the transmitter first, and check that the throttle stick is at the Stop position. Only then switch on the receiver.
- Check the control surface functions: the rudder should deflect by about 30 mm to either side of centre, while the elevator travel should be 10 mm up and 7 mm down. Check that the control surfaces move in the correct "sense" (direction), then check it again: "left stick" must produce "left rudder", and so on.
- Check that the motor responds correctly to the throttle stick. **Caution: the spinning propeller represents an injury hazard!**

### The first flight

- If everything is working properly, there is nothing to stop you flying the model. We urgently recommend that you join a model flying club in your area, or find an experienced model pilot who can carry out the first flight for you, and then help you learn the skill of flying step by step.
- However, there is also nothing to stop you learning by yourself: wait for a day with flat calm conditions or only a slight breeze. Hold the model directly into wind with the wings level and the fuselage angled up very slightly, and launch it with a reasonably firm push, straight ahead. Leave the model alone initially, and only make any corrections

to the climb angle, i.e. don't let it slow down too much. If the model veers off to one side, apply gentle opposite rudder to straighten its path.

- When the aeroplane has reached a reasonable altitude, switch the motor off and allow the model to glide. Test the controls very cautiously so that you get an idea how the model responds to commands. Try not to get over-confident, and keep the model at a safe height as long as you can; model flying is a sophisticated skill which takes time to learn, just like driving a car or riding a bike.
- Always land directly into wind. Allow the model to glide in a straight descent on the landing approach. Let it fly at its own natural pace until it is about to touch down, then apply gentle up-elevator to reduce its airspeed further. Don't apply any major rudder corrections when the model is close to the ground!

#### **Safety notes, awareness of danger**

- Model building and flying is a fascinating hobby. However, it is important to avoid annoying and endangering other people, so we recommend that you keep to the following basic rules when operating any model aeroplane.
- When you are flying a model aircraft you are personally responsible for your behaviour and any consequences of your actions. For this reason it is really essential to take out special model flight insurance cover. Your best bet is to join a local club and take out the block insurance usually offered as part of membership, or to join your national model flying association.
- In Germany you are only allowed to fly model aircraft using radio control equipment operating on the 35 MHz band, but this may not apply in your own country. Ask your local model shop, model club or any fellow-modeller for information on this. You may also need to buy a licence to operate your equipment.
- Fly your model only at sites where your activity will not annoy or endanger anyone; preferably a model flying site operated by a properly organized club.
- Never fly directly towards or above spectators, and do not be tempted to try dangerous or audacious manoeuvres in their vicinity.
- If your radio control system requires repair, have the work done by an approved technician. Carrying out any work on your equipment yourself invalidates the official approval of your RC system.
- Don't switch on your transmitter until you have established that you will not cause interference to any other RC systems in the neighbourhood; for example, two transmitters operating on the same channel will interfere with each other.
- If possible please join a model flying club, where you will find plenty of helpful modellers who will be happy to answer your questions.

**Please note:** if the model is damaged due to your failure to observe these instructions, we will not consider any claim under guarantee. We accept no liability for consequent damage resulting from your model flying activities. Please take the trouble to read the instructions for building and operating the model, and follow them as accurately as you can. Part of the instructions cover the safe operation of your model. Please remember that this model aeroplane is by no means a suitable toy for children.

**All of us in the aero-naut Modellbau team hope you have many hours of pleasure building and flying your "Rocky".**