# All fiberglass 1/4 scale sailplane
SZD-56 Diana 2
Building instructions

This is a 1:4 scale Diana 2 model of this popular sailplane. It has been designed for general sport flying with the latest technology for aerodynamic performance. Diana 2 is made using 100% molded technology.

This Diana 2 can be flown as a sport sloper or thermal soaring model and has a wide speed envelope. Diana 2 uses an airfoil 10,8%. Thus, you will be able to fly slowly in thermals, rapidly in speed runs, and a good glide ratio for distance flying. This broad speed range allows to enjoy a versatile glider. Diana 2 handles beautifully while circling in thermals and is very gentle on final approach and landing.

This all molded kit is coming with a high quality white epoxy fiberglas fuselage, and has the wing joiner carrying tube installed. The fiberglas molded with carbon reinforced wings are finished and control surfaces a live hinged, no additional work is required on the wings, except installing the wing servos and respective linkages. The elevator is finished all molded, the rudder is finished too. A clear plastic canopy and a fiberglas canopy tray is supplied and pre-assembled. Only a few hours are required to finish this glider. Detailed instructions and a hardware package are completing the kit.

The model is designed to be used by advanced modelers.
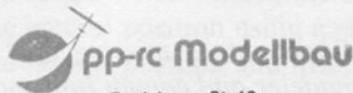
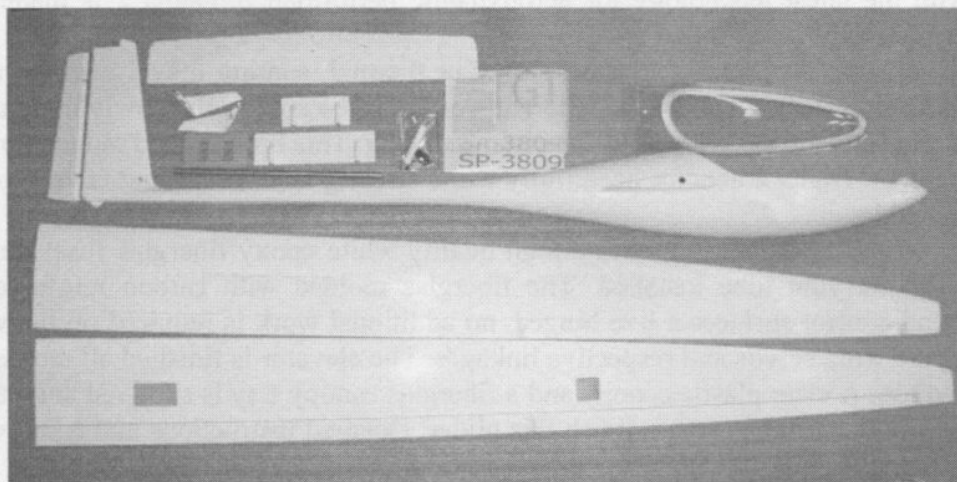|			
✈	3750 mm	▥	2600 g (empty)
✈	1700 mm	▬	10,8%
✈	63 dm²	▤	A, E, R, F, B

Kit includes:
* fiberglass fuselage,
* fiberglass wing, double-high airbrakes installed,
* horizontal stabilizer,
* rudder,
* canopy,
* canopy frame,
* wing connecting rod,
* bag with accessories
* stickers,
* building instructions

To finish the model you need:
* cyanoacrylate adhesive,
* 5-min epoxy glue,
* common modeller's tools (sharp knife, drilling machine, screwdriver, fine round file, sandpaper)

To fly you need:
* 6 channel RC set and 8 servos (at least 7 of them micro size)

Attention! Thank you to contact Royal-model immediately, if you note a missing part or a damaged part. Royal-model cannot control the dexterity of the modeler and cannot influence the builder during the assembly or the use of this radiocontrolled model, thus Royal-model will in no way accept or assume responsability or liability for damages resulting from the use of this user assembled product.

You are responsible for running this model. A damage to property or health might arise by improper use of this product. This is why you have to keep a safe distance from the buildings and other developed areas when flying. Make sure that you are the only one who is flying on the same waveband.

The product may only be used by the children over 14, supervised by adults.

The purchaser/user accepts all the responsibilities in the event of structural or mechanical problems.

Warning, this is not a toy!

FINISHING THE MODEL

The glider is ready to fly right after the installation of the RC set..

1. How to install the rudder servos

Glue the servo holder plate into the fuselage. The best position is in the rear cockpit. The rudder is mounted on clip-on hinges. Cut out the notches for rudder hinges with a razor blade, insert the hinges inside, fixing them with a lean instantaneous cement. Clip the rudder to hold.

Find the position of the rudder control horn so that the straight line connecting the holes in the horn and the axis of rotation of the control surface is perpendicular to the surface of the stabilizer and the horn itself is in the same level as the control wire coming from the fuselage. Glue the rudder horn. The rudder is controlled by a pull-wire drive. Attach the terminals to the rudder and join them with a servo using a pull-wire drive.

2. How to install the elevator servos

You must open the hole for the servo in the vertical fin. It is advisable to use a small milling cutter. Glue up the servo in the fin. Connect the servo with the receiver using an extension cable. Glue up the control lever on the elevator flap and join it using a draw rod with the servo. Attach the covers.
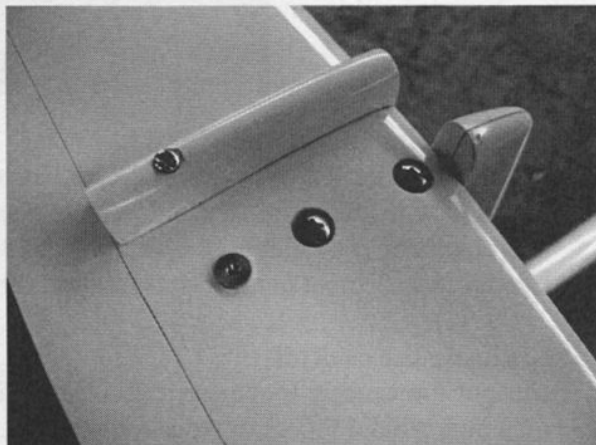
3. How to install the aileron and flaps servos

Insert the extension cables into the wing and connect them to the servos. It is recommended to solder these two cables instead of just using connectors. If soldering, take care to the isolation of the single wires. Attach the control horns to the ailerons and flaps. Fix the ailerons and flaps in the neutral position using a piece of self-adhesive tape. Install single levers to the servos, adjust the neutral position and insert the servos into the openings - not fixing them yet. Prepare 4 rods made of 1,5 mm wire with a „Z"- bend on one end, measure and cut the wires to the proper lengths, put on pieces of the white bowden and fix the endings as described above (cyanoacrylate + pressing). Screw in the clevises. Remove the servos, insert the „Z"-bends into the servo levers, and glue the servos in the openings using 5-min epoxy. Connect the pushrods to the control horns. Attach the servo covers using a double-sided self adhesive tape.
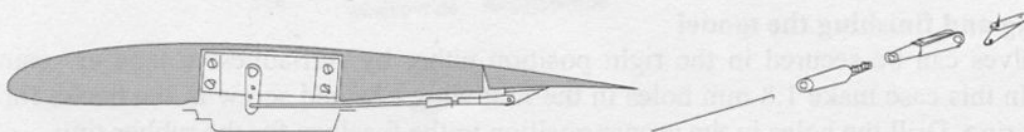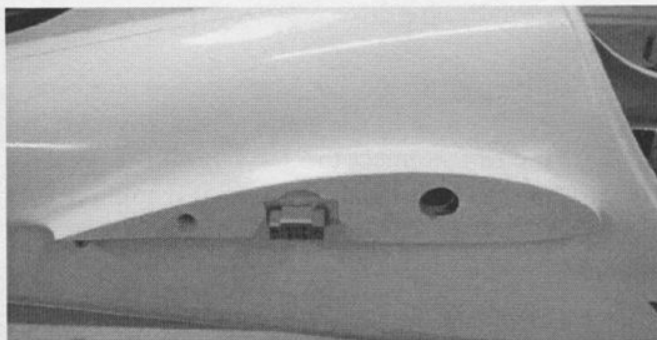
4. How to install the servos to the brakes

Attach the servos with two-sided Scotch tape to the channel and join them with the dive flap using a draw rod. You will need extension cables and a Y-cable.

Shade your spoiler by pushing slightly with a small flat screwdriver on the arms of the bar (black parts). Pull the Z of the manoeuvring on the gilded part and insert it into the interlocking hole connecetd with the bottom of the servo. Shade again your spoiler and screw down your clevis at the end of the manoeuvring. Demonstrate your servo heeding that the manoeuvring arm of the servo is in the position of closed spoilers of your radion manoeuvring. (Example full gas on the way of the engine manoeuvring of your radio) Adjust your manoeuvring and glue your servo after having checked that both spoilers servos are moving in the right direction. Cover the servos with the sheet.


5. How to install the radio and batteries

Insert the batteries, power switch and receiver in the fuselage .Connect all the servos in the fuselage with the radio. Use a Y-cable to connect the aileron servos to one channel only or use two channels, if available, for ailerons. Use a Y-cable to flaps servos and brakes servos.

Use foam to protect them from vibrations and impacts. Connect all components as necessary.

6. Fitting the cockpit

Cut out the canopy transparent section using the mark line, glue it onto the epoxy frame, trim it then and grind a bit off to a desirable shape.

The canopy is held in place with a pin and canopy lock. Bore then the matching holes in the fuselage and in the canopy frame. Glue the pin in the front canopy frame. Glue the canopy lock in the fuselage.
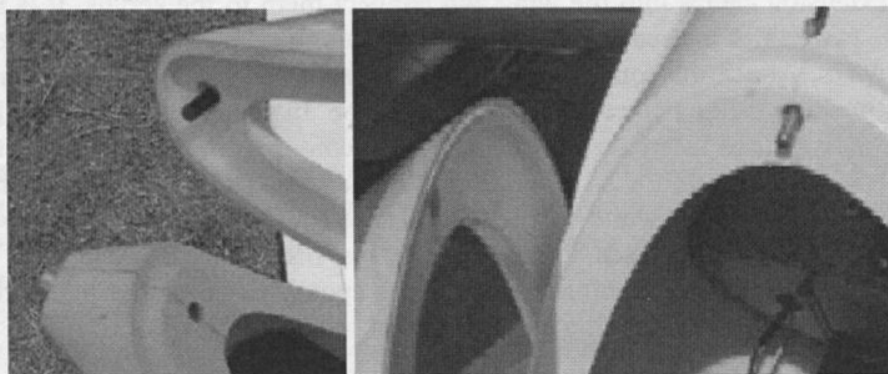
7. Assembling and finishing the model

The wing halves can be secured in the right position either by self-adhesive tape or using a rubber ring. In this case make 1.8 mm holes in the first wing ribs and screw in the hooks for the fixing rubber ring. Drill the holes in the proper position in the fuselage for the rubber ring.

Applying the decorative stickers is the last step to finish your model.

Balance: Check the centre of gravity position. This is a very important relationship between the CG location and the stall characteristics of an airplane or knife-edge performance. CG location determines the stall characteristics.

CG range from 70 to 75mm measured from the leading edge at the root of the wing.

In workshop, ready to fly, carry the model on the fingers on each side of the fuselage at the wing root, after having drawn the balance marks.

If the model leans forwards (nose heavy), move the battery backwards.

If the model leans backwards (tail heavy), move the battery forwards, add some lead if necessary.

The plane is correctly balanced when it leans very slightly forwards with the index on the reference marks.

FLYING

Insert the wing joiner into one wing, then into the fuse and add the other wing. The dowels ensure the correct incidence of the wings. You can use a white or clear tape to attach the wings to the fuse, only at upper side.

Don`t forget to check the symmetry of the whole model. Once on the field, first check the function of your RC set and check the range, too. Calm wheather is the best for the first flights. Try hand launching, trim if required for optimal gliding. Provided that everything is in order, you can go for the maiden flight, with a charged battery of course.

Besides the slope soaring it is possible to install a tow hook and use a set for high-altitude launches for thermal sparing.
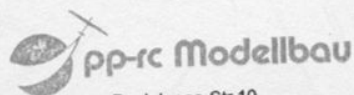
Set up:

Rudder function: +/- 40 mm
Elevator function: +/- 6 mm
Aileron function: +14/-6 mm, term flight -1mm
Flaps: max
Centre of Gravity: usually 70-75 mm from wing leading edge

Have a lot of fun and many happy landings with your Diana