Graupner

CE

Operating instructions for the SPACEBIRD model boat, Order No. 2017

Model description

The SPACEBIRD is based on a design study for a high-speed racing boat. The modern colour scheme and carbon-look sponsons give the vessel a highly futuristic appearance, and it is a real head-turner at any lakeside. The hull features a basic white finish, while the decal sheet is designed to match virtually any colour; this allows the modeller to finish the boat in the colour scheme of his choice. In principle the model is suitable for running in the HYDRO 1 and HYDRO S7 classes, but it is not optimised for such applications.

Specification

Overall length approx.	675 mm
Hull length approx.	600 mm
Beam approx.	420 mm
All-up weight approx.	1.3 kg

Manufacturer's declaration from Graupner GmbH & Co. KG
Content of the manufacturer's declaration:
If material defects or manufacturing faults should arise in a product distributed by us in the Federal Republic of Germany and purchased by a consumer (§ 13 BGB), we, Graupner GmbH & Co. KG, D-73230 Kirchheim/Teck, Germany, acknowledge the obligation to correct those defects within the limitations described below.
The consumer is not entitled to exploit this manufacturer's declaration if the failure in the usability of the product is due to natural wear, use under competition conditions, incompetent or improper use (including incorrect installation) or external influences.
This manufacturer's declaration does not affect the consumer's legal or contractual rights regarding defects arising from the purchase contract between the consumer and the vendor (dealer).

Extent of the guarantee
If a claim is made under guarantee, we undertake at our discretion to repair or replace the defective goods. We will not consider supplementary claims, especially for reimbursement of costs relating to the defect (e.g. installation / removal costs) and compensation for consequent damages unless they are allowed by statute. This does not affect claims based on legal regulations, especially according to product liability law.

Guarantee requirements
The purchaser is required to make the guarantee claim in writing, and must enclose original proof of purchase (e.g. invoice, receipt, delivery note) and this guarantee card. He must send the defective goods to us at his own cost, using the following address:

Gliders
Brunel Drive, Newark, Nottinghamshire, NG242EG

The purchaser should state the material defect or manufacturing fault, or the symptoms of the fault, in as accurate a manner as possible, so that we can check if our guarantee obligation is applicable.
The goods are transported from the consumer to us and from us to the consumer at the risk of the consumer.

Duration of validity
This declaration only applies to claims made to us during the claim period as stated in this declaration. The claim period is 24 months from the date of purchase of the product by the consumer from a dealer in the Federal Republic of Germany (date of purchase). If a defect arises after the end of the claim period, or if the evidence or documents required according to this declaration in order to make the claim valid are not presented until after this period, then the consumer forfeits any rights or claims from this declaration.

Limitation by lapse of time
If we do not acknowledge the validity of a claim based on this declaration within the claim period, all claims based on this declaration are barred by the statute of limitations after six months from the time of implementation; however, this cannot occur before the end of the claim period.

Applicable law
This declaration, and the claims, rights and obligations arising from it, are based exclusively on the pertinent German Law, without the norms of international private law, and excluding UN retail law.

Important safety notes

You have purchased a kit which can be assembled to produce a fully working RC model when fitted out with the appropriate accessories. As manufacturers, we at GRAUPNER are not in a position to influence the way you install, operate and maintain the model, nor the other components used in connection with the model. For this reason we are obliged to deny all liability for loss, damage or costs which are incurred due to the incompetent or incorrect use and operation of our products, or which are connected with such operation in any way. Unless otherwise prescribed by binding law, the obligation of the GRAUPNER company to pay compensation, regardless of the legal argument employed, is excluded. This includes personal injury, death, damage to buildings, loss of trade or turnover, interruption of business or other indirect or direct damages which are caused by the operation of the model.
Under all circumstances and in all cases the company's overall liability is limited to the amount which you actually paid for this model.

The model is operated at the sole risk of the operator. To avoid injury to persons and damage to property please handle your model boat carefully and operate it conscientiously at all times.

Before you run the boat for the first time it is important to check that your private third party insurance policy provides cover when you are operating model boats of this kind. If you are not sure, take out a special insurance policy designed to cover the risks of RC modelling.
These safety notes are important, and must be kept in a safe place. If you ever dispose of the model, be sure to pass them on to the new owner.

The following points are important and must be observed at all times:

- This model is not suitable for young persons under 14 years of age.
- The projecting parts of the model may be sharp, and the aerials and masts could cause eye injuries.
- Bear in mind that tools can be dangerous; always be careful when handling them.
- *Never* operate the model when there are persons or animals in the water, as its high speed constitutes a considerable injury hazard.
- Do not run your model in protected sites, animal or plant sanctuaries or sites of special scientific interest (SSSIs). Check with your local authority that the stretch of water you wish to use is suitable for model boats.
- *Never* run the boat in salt water.
- *Never* run the boat in adverse conditions, e.g. rain, storm, strong wind, choppy water or strong currents.
- Read the instructions provided with your radio control system and accessories, and observe the recommendations.
- Before you run the model check that the radio control system is working reliably, and that all connections are secure.
- Dry batteries must never be recharged. Only batteries specifically marked as "rechargeable" are safe to recharge.
- Check the range of the radio control system before each session: ask a friend to walk about 100 m away from the model carrying the transmitter. Your friend will be able to tell you whether all the working functions operate correctly at this range.
- Ensure that the frequency you intend to use is not already in use by other modellers. Never run your boats if you are not certain that your channel is free.
- Bear in mind that other radio equipment and transmitting stations can cause serious interference to the model. Ensure that no equipment of this type is being used in the vicinity while you are operating the model.
- Do not carry out any work on the drive train unless you have disconnected and removed the battery.
- When the drive battery is connected, *keep well clear* of the area around the propellers, and make sure any spectators do the same.
- Do not be tempted to exceed the recommended operating voltage. Higher voltages may cause the motors or speed controller to overheat, and the electrical cables may even melt. If this should happen, the model could easily be ruined.
- Check that all the drive train components work smoothly and freely. This applies in particular when the boat is running, as leaves and other debris may get caught in the power system components. The motors and speed controller could then be ruined by overloading.

- Dry cells and rechargeable batteries must never be short-circuited. Do not allow them to come into direct contact with water.
- Remove the rechargeable battery and the dry cells in the transmitter and receiver pack if the model is to be transported, or will not be used for a long period.
- Do not subject the model boat to high levels of humidity, heat, cold or dirt.
- Secure the model and your RC equipment carefully when transporting them. They may be seriously damaged if they are free to slide about.
- *Never* operate the boat in moving water (e.g. a river), as its low speed may result in the model drifting off downstream.
- If you have to *salvage* the model, take care ***not to risk your own life or that of others***.
- Take particular care to ensure that the boat is completely watertight, as it will sink if too much water enters the hull. Check the model for damage before every run, and ensure that water cannot penetrate through the shaft bearings or the rudder bush.
- The hatch cover ***must be sealed thoroughly with clear adhesive tape*** before each run; make sure the tape cannot come adrift when the boat is on the water.
- Allow the boat to dry out thoroughly after each session.
- Be sure to check repeatedly during the first run that the shaft system is watertight. If water enters the hull through the shaft tube, remove the shaft and lubricate the tube with plenty of grease, Order No. 570.

Care and maintenance

- Clean the model carefully after every run, and remove any water which penetrates the hull. If water gets into the RC components, dry them out carefully and send them to your nearest GRAUPNER Service Centre for checking.
- Clean the model and transmitter using suitable cleaning agents only. All you need is a lint-free cloth. *Never* use chemical cleaners, solvents, methylated spirits, white spirit or similar.
- Lubricate the propeller shaft at regular intervals by applying a small drop of oil to the bearings. Use a type of oil which does not soil or contaminate water, e.g. Order No. 206. At the end of the season we recommend that you remove the propeller shaft and re-lubricate it using water-neutral grease, e.g. Order No. 570.

Notes on assembling the model

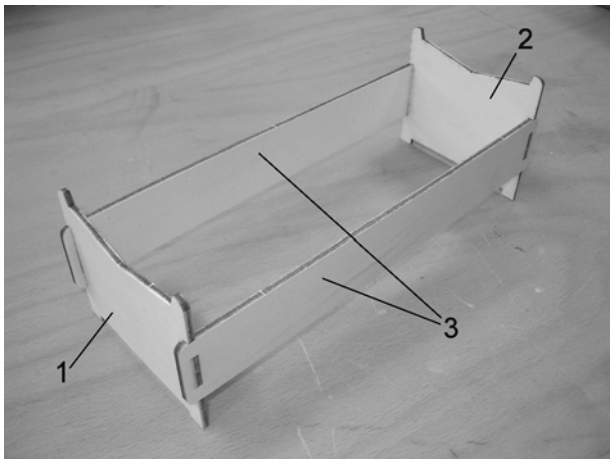
- Before you start building the model, please take the time to study the plan and read right through the instructions, using the Parts List as an aid. In general terms the instructions and the parts list reflect the sequence of assembly.
- You will find a sketch at the end of these instructions showing the part numbers; this is intended to help you identify the laser-cut components.
- Before gluing parts together it is important to clean the joint surfaces carefully. This is best done by sanding lightly, followed by wiping with a non-greasy liquid detergent or methylated spirit (“meths”). The same applies to all surfaces which are to be painted, as this improves the paint’s adhesion considerably.
- Recommended adhesives for joining particular materials:

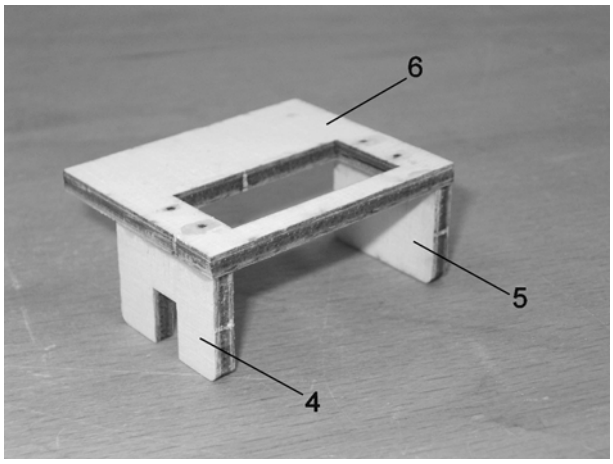
Material - material	**Suitable adhesives**
GRP - metal / plastic / wood	Cyano-acrylate, UHU plus
GRP - rubber	Cyano-acrylate
Wood - wood	Cyano-acrylate, UHU hart, white glue

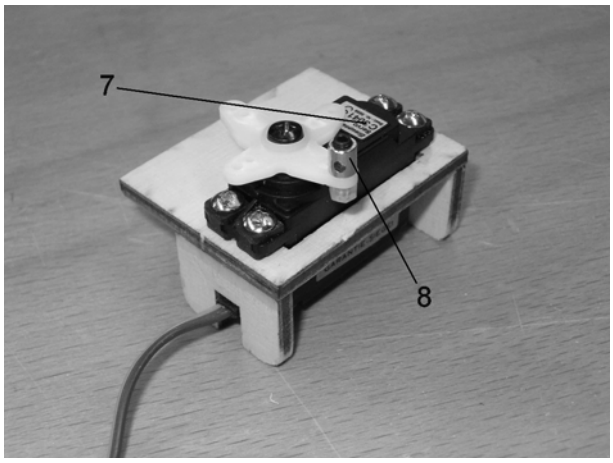
Read the instructions supplied with the adhesives. Be sure to observe any special notes in the instructions regarding particular adhesives. If you are using acetone, methylated spirits or any other solvent as a cleaning agent, special safety measures are necessary. Read the instructions supplied with these materials.

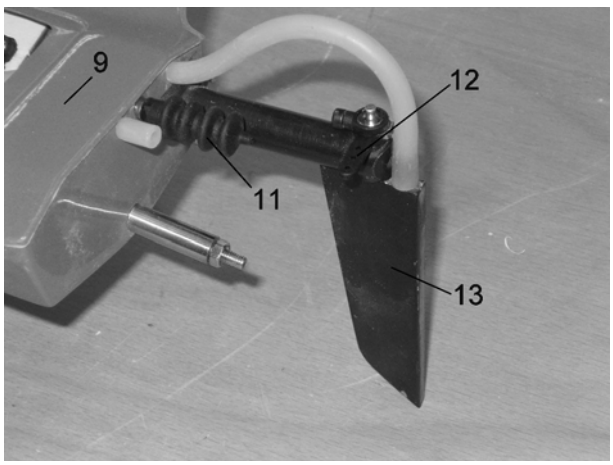
Assembly instructions

- Assemble the front, rear and side panels of the boatstand (parts 1, 2 and 3) and glue the joints securely.
- Assemble the servo mount from the front and rear supports (parts 4 and 5) and the base plate (part 6), and glue the joints. **NOTE**: the rectangular notch in one of the supports is for the servo lead; see the Stage photo.
- Locate the rubber grommets supplied with the servo; press them into the mounting lugs of the rudder servo (part 7), and push the brass spacer sleeves into the grommets from the underside. The servo can now be screwed to the servo mount assembly. Remove three arms from the four-armed servo output device, leaving one long arm attached. Drill out the outermost hole to 2 mm Ø, and attach a swivel pushrod connector (part 8) to the output arm.
- **NOTE**: at this stage it is advisable to paint the hull and the hatch cover in the colour of your choice; the rudder system and the sponsons are only screwed in place, and can easily be removed prior to painting. Rub down the whole of the hull and hatch cover using fine-grit abrasive paper (400-grit or 600-grit) to ensure that the paint adheres strongly. Any synthetic enamel colour paint should be suitable; ask at your model shop if you are not sure which type to choose.
- Trim the servo mount to conform to the shape of the hull (part 9), and glue it in place as shown; the distance between the motor mount and the servo mount should be about 30 mm. **NOTE**: before reaching for the glue, check that the hatch cover (part 10) still fits on the hull; there is very little clearance between the swivel pushrod connector and the hatch cover.
- Push the rubber bellows (part 11) over the tube on the outside of the hull and glue it in place.
- Assemble the tiller (part 12) by pushing the collet into the plastic moulding and fitting the socket-head screw in the collet. Remove two arms from the tiller; the finished article should look as shown in the photo. Drill out the outermost hole to 2 mm Ø and mount a second swivel pushrod connector (part 8) in the hole. Note that this connector must be fitted on the underside of the tiller arm.
- Fit the rudder (part 13) in the rudder bush, and tighten the screw in the tiller collet (part 12) to secure the rudder. Push the water-cooling hose onto the stub tube on the rudder.
- **NOTE**: the following description refers to the standard power system. The procedure for the brushless power system is the same, except that the suppressor capacitor is not required. Attach the suppressor capacitor (part 15) to the motor (part 14) by soldering it across the two motor terminals to form a bridge. Solder the speed controller cables to the motor terminals at the same time. IMPORTANT: take care to maintain correct polarity! Temporarily connect the RC system and



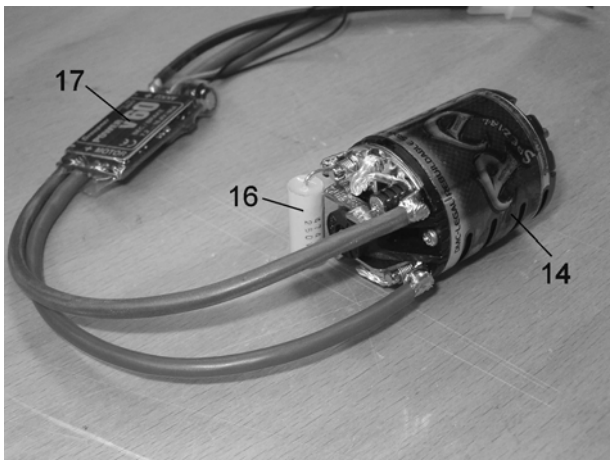


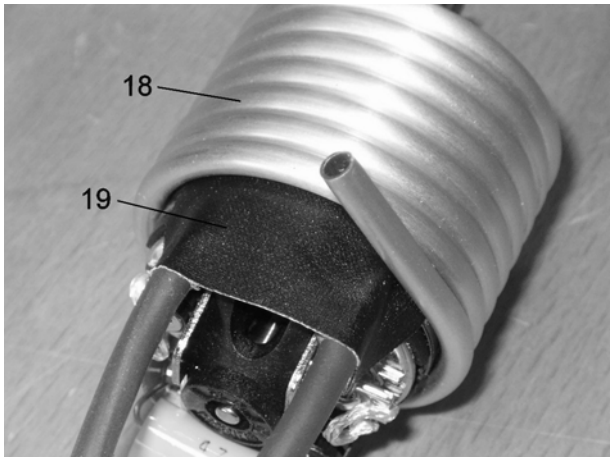


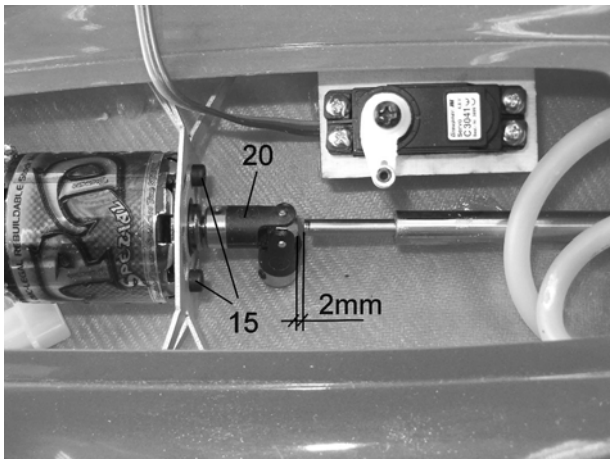


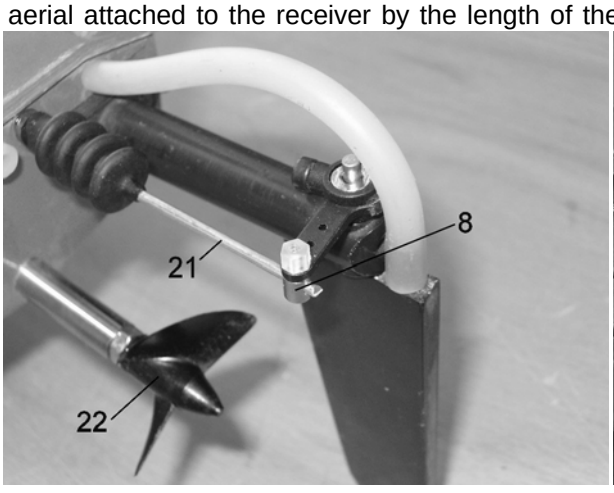
check from the transmitter that the motor spins in the correct direction. If not, reverse the wires at the motor terminals; on no account reverse the battery wires!

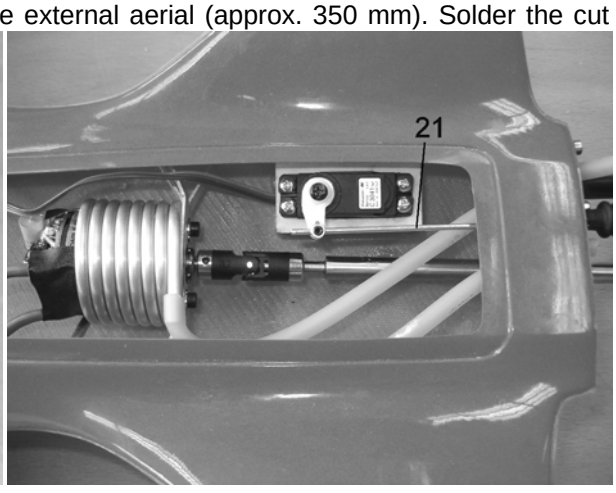
- Since the water-cooling coil (part 16) is made of conductive aluminium, it is essential to insulate the motor terminals electrically. This is accomplished by winding heat-resistant insulating tape (part 17) round the motor terminals. Slide the water-cooling coil over the motor, taking care not to damage the insulating tape or push it out of position.
- **NOTE**: the propeller shaft in the model is longer than required; this allows it to be shortened to suit different power systems or shaft couplings. Assemble the shaft coupling (part 18), and screw it to the motor shaft. Install the motor in the motor mount inside the hull. Angle the shaft coupling as shown in the photo. Shorten the shaft in such a way that there is a clear gap of about 2 mm at the connection. Lubricate the shaft with plenty of grease. The shaft coupling can now be screwed to the propeller shaft.
- Locate the 2 mm Ø steel rudder pushrod (part 19), and cut it to a length of about 160 mm. Cautiously slide the rudder pushrod through the rubber bellows and through both swivel connectors. Set the servo and the rudder to centre, then tighten the screws in the two swivel connectors to clamp the pushrod permanently.
- Screw the propeller (part 20) onto the exposed end of the shaft, and tighten the locknut against it.
- Attach the speed controller to one inside face of the hull using a piece of Velcro (hook-and-loop) tape (part 21) about 20 mm long.
- Connect the rudder servo and the speed controller to the receiver (part 22), and then mount the receiver towards the stern of the hull using another 20 mm length of Velcro tape.
- Drill a 2.5 mm Ø hole in the stern end of the hull in the approximate position shown in the photo. The exact location is not critical; the only important factor is that you can easily gain access to it inside the hull. Form a 3 mm Ø loop in both ends of the 0.5 mm Ø steel wire to form the external whip aerial (part 23). Shorten the flexible aerial attached to the receiver by the length of the external aerial (approx. 350 mm). Solder the cut





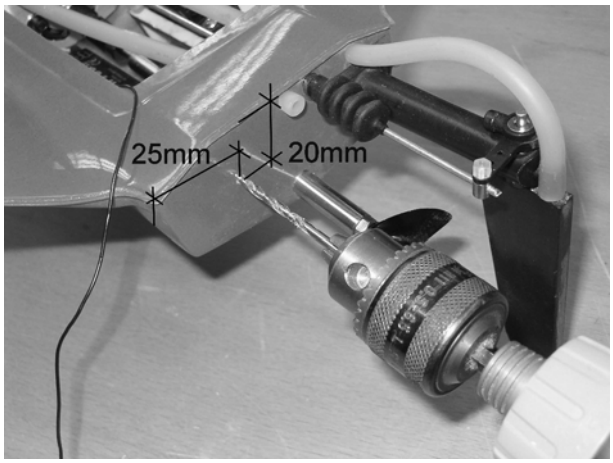


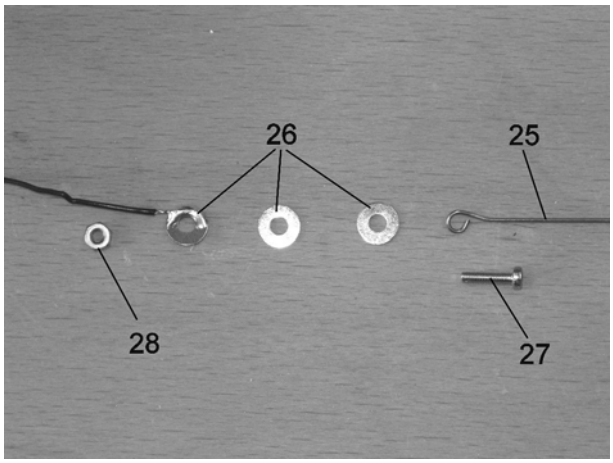


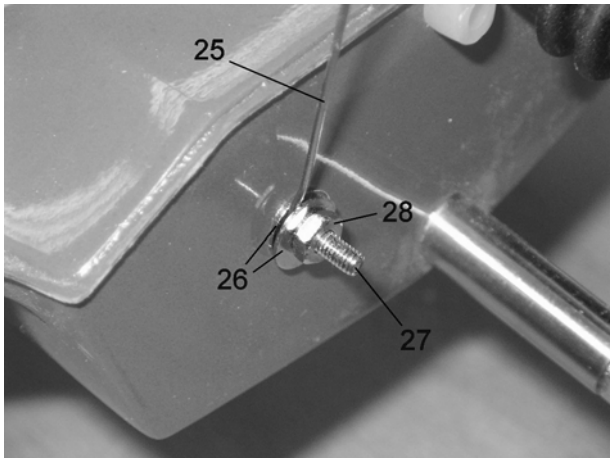


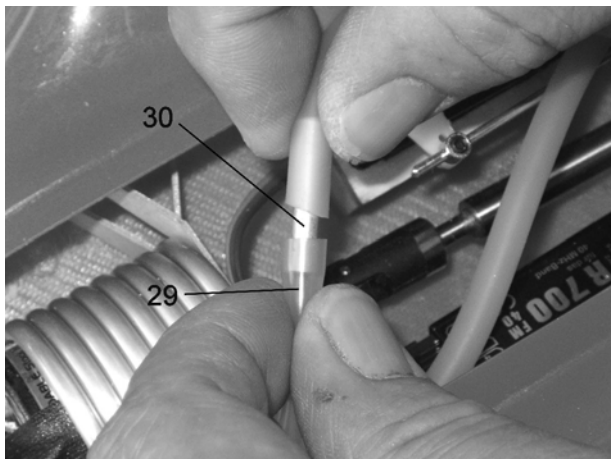
end of the flexible aerial to a washer (part 24).

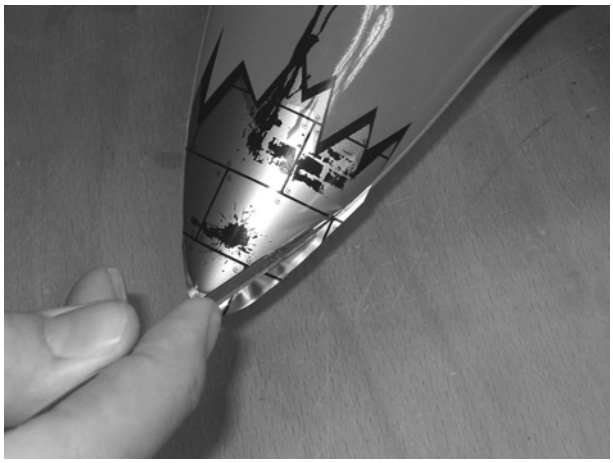
- Fit the second washer on the M2.5 screw (part 25), followed by one loop of the external aerial; fit this assembly through the hole in the hull from the outside. Now slip the washer with the flexible aerial soldered to it on the end of the screw projecting inside the hull, followed by the nut (part 26); tighten the parts together to clamp the aerial. TIP: apply plenty of UHU hart round the nut on the inside of the hull; this will make the hole watertight as well as preventing the nut working loose.
- Connect the water-cooling coil to the silicone hoses. If the factory-fitted hoses are not long enough, they can be extended with the additional piece of silicone tubing (part 27). A 32 mm length of aluminium tube is supplied to act as hose connector (part 28). IMPORTANT: rotate the coil of tubing on the motor to a position where the projecting tube ends do not foul the underside of the hatch cover.
- Fix the drive battery in the hull using the remaining 80 mm length of Velcro tape (part 21). The battery should be positioned in the hull in such a way that the fully-equipped boat balances at a point approximately at the forward end of the hatch cover. You will probably need to adjust the position of the battery to obtain the correct trim; the use of Velcro tape makes this an easy task.
- Apply the decals to the boat as shown in the kit box illustrations. It is best to cut out the decals accurately, leaving no margin, and apply each one separately. **TIP**: the decal for the tip of the bow is slightly oversized; carefully trim off the excess at the edge of the hull using a sharp modelling knife.

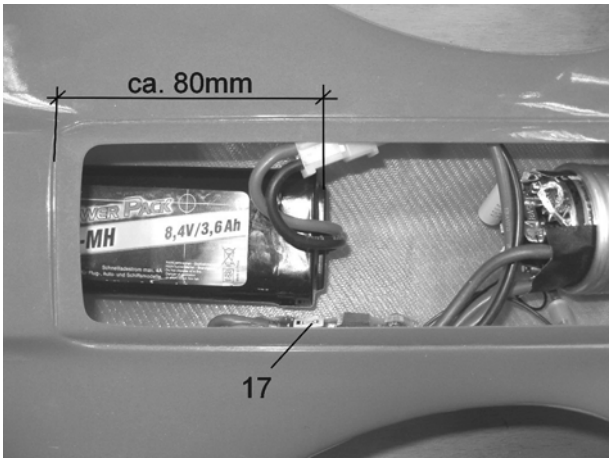




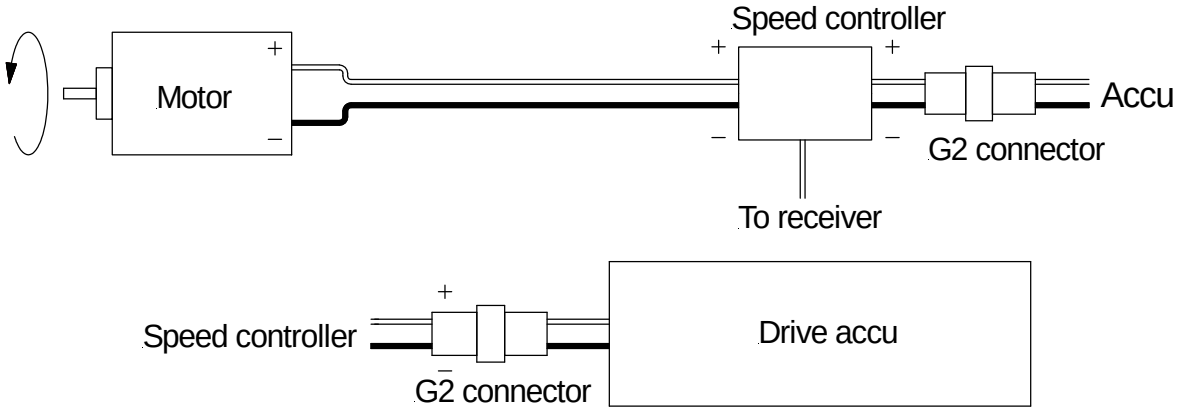








Wiring diagram



Maiden run

Give all the batteries a full charge, and carefully test the model's working systems in turn. **IMPORTANT**: ensure that the hatch cover is watertight. You are now ready for the boat's maiden run. Take your time to become accustomed to the model's handling characteristics. The boat is very fast, and therefore requires a suitably large area of water. Don't let the boat get too far away from the bank.

All of us at Graupner hope you have many hours of pleasure running your SPACEBIRD.

Parts List

Part No.	Description	No.	Material	Dimensions and thickness in mm
1	Boatstand, front section	1	Wood	4 mm plywood
2	Boatstand, rear section	1	Wood	4 mm plywood
3	Boatstand, side panel	2	Wood	4 mm plywood
4	Servo mount, front	1	Wood	4 mm plywood
5	Servo mount, rear	1	Wood	4 mm plywood
6	Servo mount, base plate	1	Wood	4 mm plywood
7	Rudder servo	1	Ready made	Order No. 3899
8	Swivel pushrod connector	2	Ready made	Consisting of metal barrel, plastic nut and M3 grubscrew
9	Hull	1	GRP	Ready made
10	Hatch cover	1	GRP	Ready made
11	Rubber bellows	1	Rubber	Ready made
12	Tiller	1	Various	Plastic tiller with metal collet and M3 socket-head screw
13	Rudder	1	Plastic	Ready made
14	Motor	1	Ready made	See Accessories
15	Suppressor capacitor	1	Ready made	See Accessories; not required for brushless motor
16	Speed controller	1	Ready made	See Accessories
17	Water-cooling coil	1	Ready made	Aluminium tube, 4 / 3 mm Ø, coiled

18	Insulating tape	2	Plastic	Adhesive tape with insulating qualities, e.g. Order No. 531.19
19	Rudder pushrod	1	Steel rod	2 Ø x 160 mm
20	Propeller	1	Plastic	36 Ø, same as Order No. 2318.36
21	Velcro (hook-and-loop) tape	1	Plastic	Cut to 20 mm, 20 mm and 80 mm
22	Receiver	1	Ready made	Included in RC set
23	External aerial	1	Steel wire	0.5 Ø x 350 mm
24	Washer	2	Metal	7 Ø x 2.8 Ø x 0.5 mm
25	Screw	1	Metal	M2.5 x 10 mm
26	Nut	1	Metal	M2.5
27	Silicone tubing	1	Plastic	5 Ø x 3 Ø x 500 mm
28	Tubing connector	1	Aluminium	4 Ø x 3 Ø x 32 mm

The Parts List also contains accessories which are not included in the kit; these must be purchased separately.

Replacement parts
Order No. 2017.2 Hull
Order No. 2017.3 Hatch cover
Order No. 2017.5 Rudder system
Order No. 2017.6 Turn fin
Order No. 2017.7 Sponson set

The following items are also required (not included in the set)
Order No. 4714 X-412 FM RC set, 40 MHz
Order No. 3899 C 3041 ECO mini-servo (rudder servo)

To seal the hatch cover, please use the adhesive tape, Order No. 531.19. This tape seals well, but is easier to remove than other tapes such as TESA film.

Standard power version
Order No. 2847 POWER V60 speed controller
Order No. 97157 GM Pinnacle Diamant SP drive motor
Order No. 2490.7 GM Power Pack 7N-3600 Ni-MH drive battery, 8.4 V / 3.6 Ah

Fun power version
Order No. 7237 BRUSHLESS CONTROL 70 speed controller
Order No. 97273 BRUSHLESS Dr. SPEED 13.5T drive motor
Order No. 98902.7 GM Power Pack 7N-4500 Ni-MH drive battery, 8.4 V / 4.5 Ah
Order No. 3588 Suppressor capacitor (pack of two)

Ultra Fun power version
Order No. 2898.12 GM-Genius 95 speed controller in heat-shrink sleeve
Order No. 6549 INLINE 420i drive motor
Order No. 98902.7 GM Power Pack 7N-4500 Ni-MH drive battery, 8.4 V / 4.5 Ah