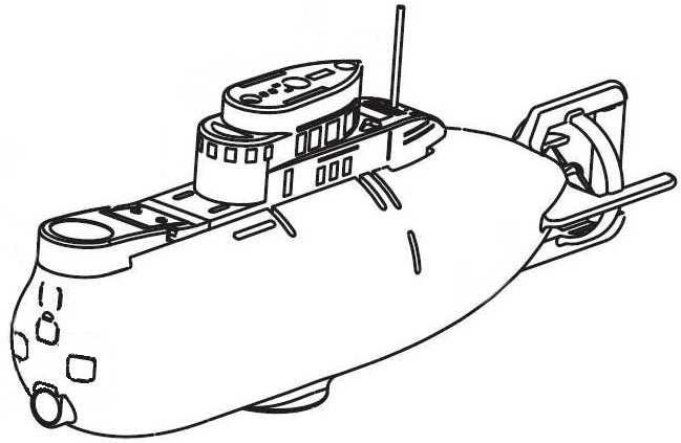
Graupner

CE

Operating instructions for the GRAUPNER U-16, Order No.: 2018



The full-size

The U-16 is based on a submarine operated by the German Federal Navy.
The model is shorter than scale, and the relatively short hull and transverse stern thruster provide excellent manoeuvrability.

The model

The sub features a real static diving system utilising a vertical movement motor which controls a flood tank. As the tank floods, the boat starts to sink under its own weight; it surfaces using the same method. The result is that the model can “hover” (remain stationary) in the water. Turns are carried out by a small transverse thruster at the stern, enabling the boat to turn “on the spot”.
The drive battery can be charged quickly and easily, as the switch socket doubles as the charge socket. As the submarine is so small, it can easily be operated in the bath or in a large aquarium.

Specification

Hull length approx.	132 mm
Beam approx.	33 mm
Height approx.	50 mm
All-up weight incl. RC approx.	72 g
Max. diving depth approx.	0.5 m

Important safety notes

You have purchased a model which forms a fully working RC model boat 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 running the boat for the first time it is important to check that your private third-party insurance policy covers the operation of model boats of this type. You may have to take out a special insurance covering the

hazards 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.

Guarantee conditions
The guarantee provides for free repair or replacement of any part which exhibits proven manufacturing or material faults within the guarantee period of 24 months from the date of purchase. We will not consider any claims beyond these conditions. The cost of transport, packing and carriage are payable by the purchaser. We accept no liability for transit damage. If you send goods to GRAUPNER or to the approved Service Centre for your country, be sure to enclose an accurate description of the fault together with the dated purchase receipt. The guarantee is invalid if the component or model fails due to an accident, incompetent handling or incorrect usage.

Environ mental Protection Notes

When this product comes to the end of its useful life, you must not dispose of it in the ordinary domestic waste. The correct method of disposal is to take it to your local collection point for recycling electrical and electronic equipment. The symbol shown here, which may be found on the product itself, in the operating instructions or on the packaging, indicates that this is the case.

Individual markings indicate which materials can be recycled and re-used. You can make an important contribution to the protection of our common environment by re-using the product, recycling the basic materials or recycling redundant equipment in other ways.
Remove batteries from your device and dispose of them at your local collection point for batteries.
If you don't know the location of your nearest disposal centre, please enquire at your local council office.

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.
- Operate the model ***carefully*** when there are people or animals in the water, and ***always*** keep a safe distance away from people and animals.
- As a basic rule we recommend that the boat should only be operated in clean water, i.e. water with no floating particles in the water (e.g. algae, leaves, twigs etc.), offering good vision right to the bottom, and devoid of marine plants in which the boat could become tangled. We recommend a small, fairly shallow bathing pool, a large, clean aquarium or a bathtub. The basic rule is that you should ***always*** be able to salvage the model ***without*** having to get into the water.
- Never allow the boat to run too far away or dive too deep, otherwise you could easily lose it. Keep the model well in sight, and don't let it submerge deeper than 0.5 m.
- Never 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 marked currents.
- The dry batteries must ***never*** be recharged. Only batteries marked specifically as "rechargeable" can be recharged safely.
- Rechargeable batteries of the same size and type may be used at the operator's discretion, but we do not recommend it. Use only a 9 V block dry battery to power the transmitter, and C-size dry cells in the charger.
- Check that the radio control system is working properly before you run the model in the water.
- Check the range of the radio control system before each session: ask a friend to walk about 5 m away from the model carrying the transmitter, and check that all the working functions operate correctly at this range.
- Ensure that the 27.145 MHz frequency you intend to use is not already in use by other modellers. Never run your boat if you are not certain that your channel is free.
- Bear in mind that other radio equipment and transmitting stations operating in the 27 MHz band are potential sources of serious interference to the model. Ensure that no equipment of this type is in use in the vicinity while you are operating the model.
- Take care to avoid particles in the water getting into the flood tank inlet opening, as they could jam the mechanism and overload the adjustment system.
- Ensure 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.

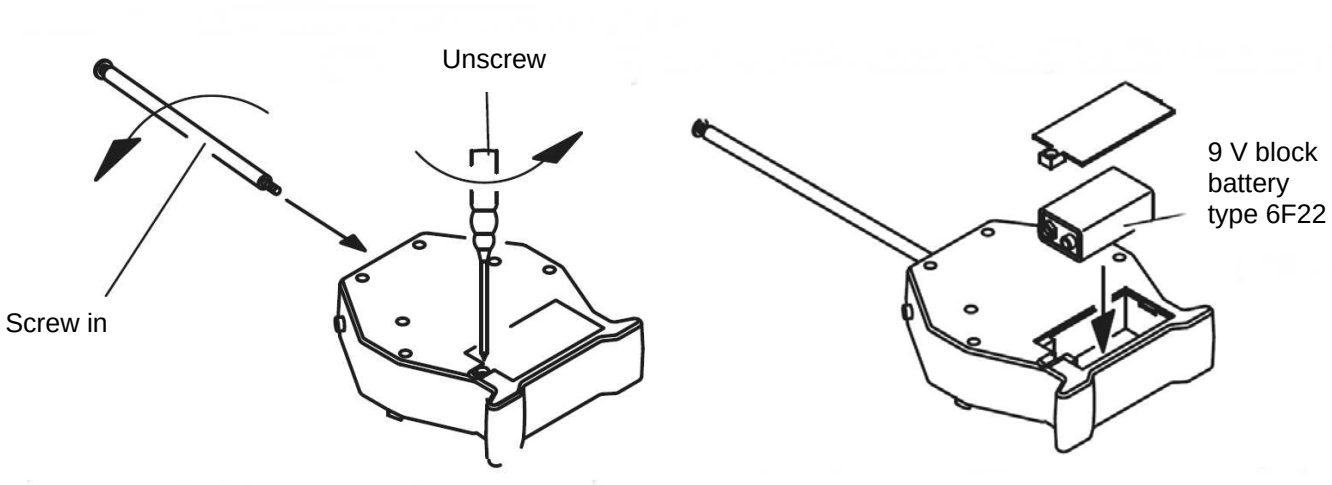
- Dry cells and rechargeable batteries must never be short-circuited. Do not allow them to come into direct contact with water.
- The battery charger features a time-controlled cut-off circuit. The battery should not be left on charge unsupervised. The charge process must not be repeated in quick succession, as this would seriously overcharge the battery, and possibly damage or even ruin it.
- Remove the batteries from the transmitter and charger if the model is not to be used for a long period.
- If the rechargeable battery in the model fails, do not dispose of it in the household rubbish. The pack should be taken to your local battery disposal site. The model must be opened to remove the battery.
- Do not dispose of the electronic components in the model and the transmitter in the household rubbish. Take them to your local specialist recycling centre; your local authority will tell you where it is located.
- Do not subject the model submarine, the charger or the transmitter to high levels of heat, cold or dirt.
- Secure the model, the charger and the transmitter 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 and poor visibility in murky water 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 submarines will sink if too much water enters the hull. Check the boat for damage before every run, and ensure that water cannot penetrate. The switch flap ***must always*** be closed fully, i.e. flush with the hull, providing a watertight seal.
- Allow the boat to dry out thoroughly after use.

Care and maintenance

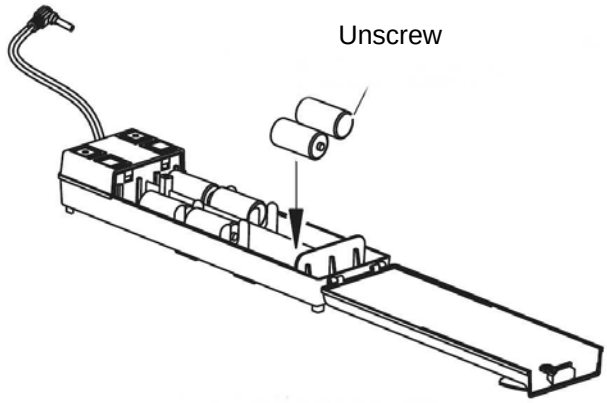
- Clean the model carefully after every run, rinse the prepared model with clean water, and remove any water which penetrates the hull. If water gets into the RC components, dry them out carefully and send them to your nearest GRAUPNER Service Centre for checking.
- Clean the model and transmitter using 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 shafts with a small drop of oil after each session, as the shaft bearings are also the shaft seals. Use only a non-contaminating oil such as Order No. 206.

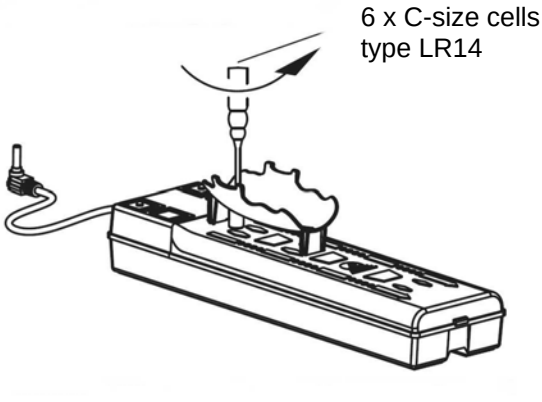
Operating instructions

- The first step is to fit the dry battery in the transmitter: undo the cross-point screw at the bottom of the transmitter, and remove the cover plate. Insert the 9 V block battery with correct polarity, re-fit the cover plate and tighten the retaining screw again.

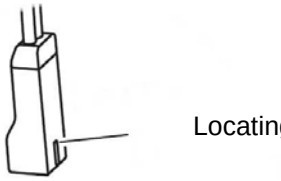


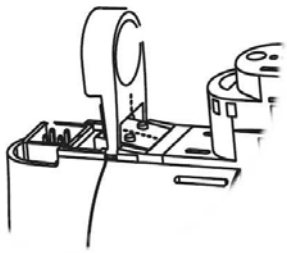
- Six C-size dry cells have to be fitted in the charger. First ensure that the charger is switched off (switch at OFF position), then insert the cells with correct polarity. The cell positions are marked on the base plate.

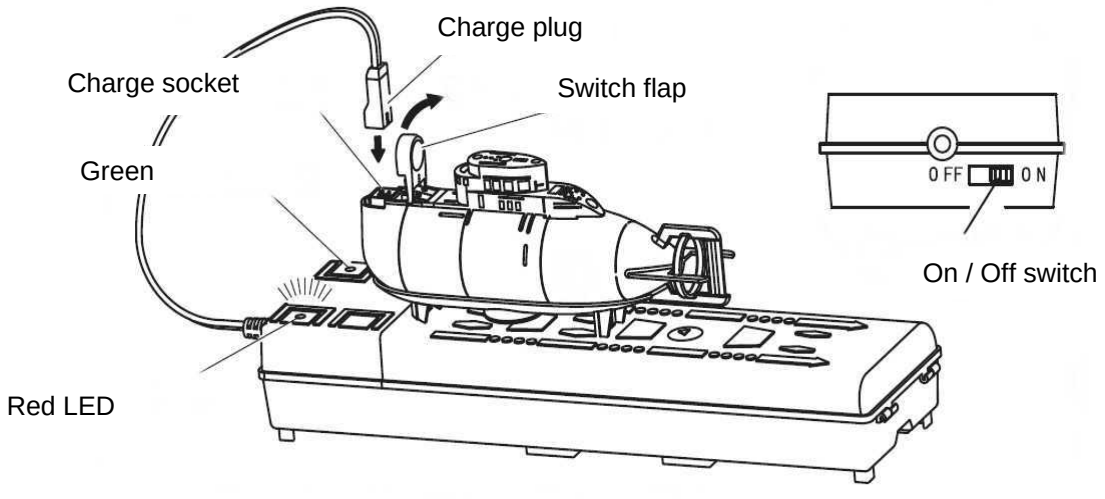




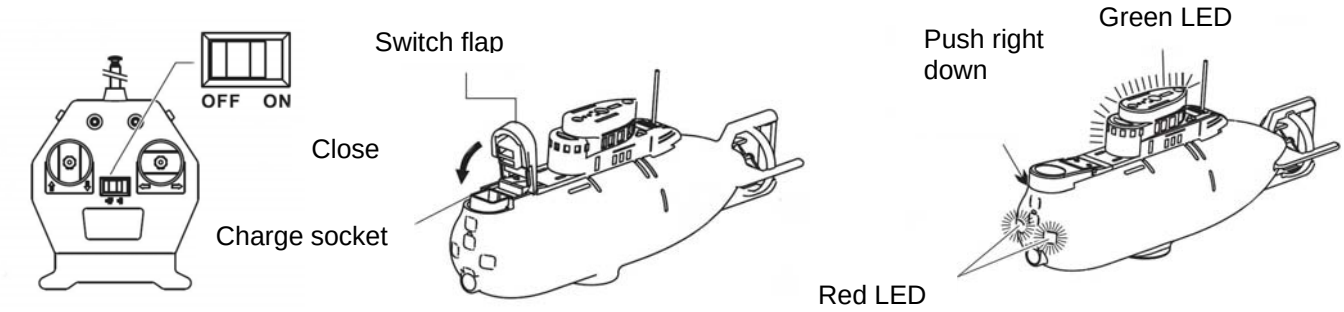
- The next step is to charge up the drive battery in the model. Locate the switch flap on the model and raise it. Connect the plug on the charge lead to the socket, noting the locating lug. Switch the charger on: the charge LED starts to flash red. **NOTE**: for technical reasons the green LED will light up at brief intervals during the charge process. The charge process is finished when the red LED stops flashing and the green LED glows constantly (charge time about ten minutes).





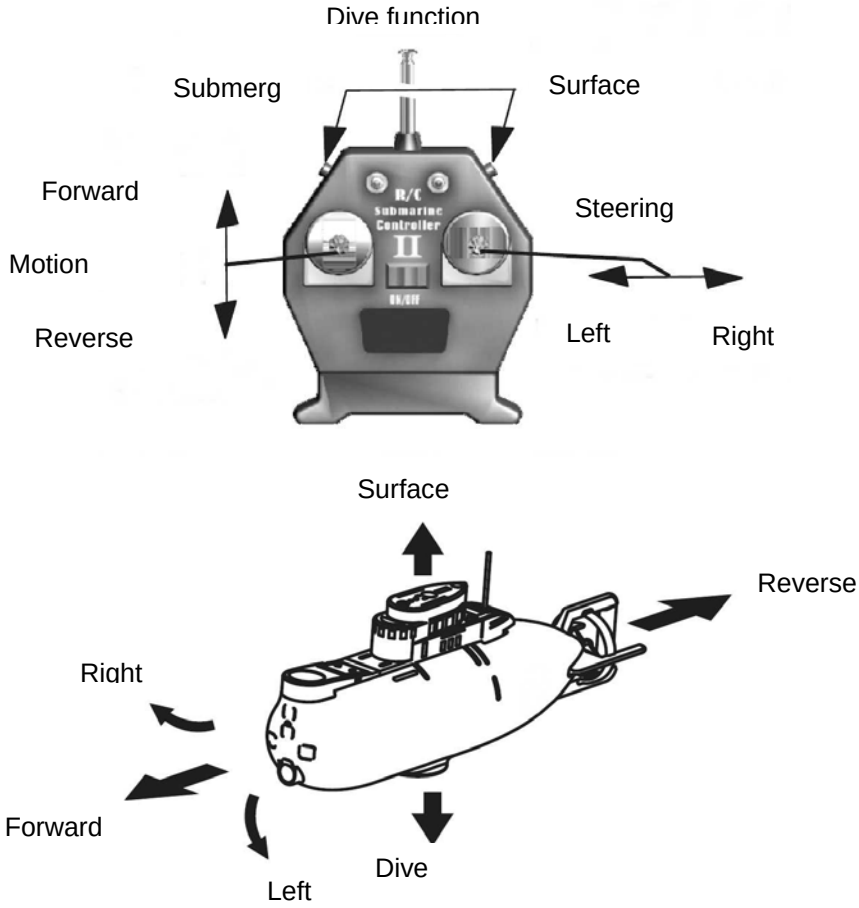


- Switch the transmitter on. ***IMPORTANT***: always switch the transmitter on first, and only then the model. Reverse the sequence when switching off: switch off the model first, and then the transmitter. The only time that the transmitter does not need to be switched on first, even though the model is on, is during the brief process of inserting the charge lead into the charge socket, since the charge lead switches the model off again. The model does not feature a separate switch; it is turned on by closing the switch flap.



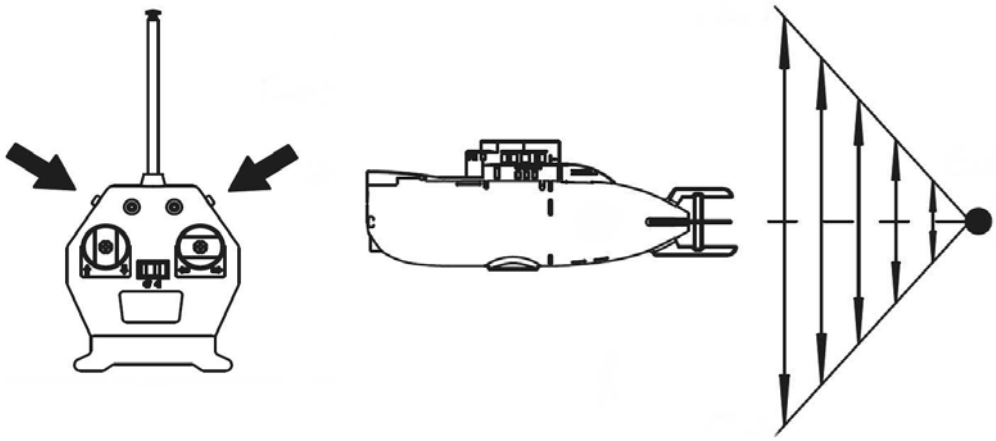
Model switched off	Switch flap open, green LED off
Model switched on, not ready to run	Switch flap touching the contacts, but not yet closed fully (watertight); the green LED glows
Model switched on, ready to run	Switch flap closed fully (watertight), the green LED glows
Model switched on, drive battery in model on charge	Switch flap open, charge lead plugged in

The model's functions



Dive function

The dive (submerge) function adjusts the level of water in the flood tank. When water flows into the tank, the model becomes heavier, and it submerges. Reducing the quantity of water causes the model to surface again. Briefly pressing the submerge / surface knob enables the operator to find a position at which the model "hovers" (remains stationary) in the water. If the model does not submerge even though the tank is full, then there are small air bubbles inside the open area of the conning tower, or adhering to the hull. You can eliminate these by pushing the model under the water for a moment and moving it around until the bubbles rise to the surface.



The model surfaces or dives at different rates according to the amount of water in the tank.

Maiden run

Charge the battery and check each of the model's functions in turn. Ensure that all the loose parts are firmly located - especially the switch flap. You can now launch the sub on its maiden run. Note that you may need to push the model under the water for a moment to allow air bubbles to escape from the open conning tower area. Operate the boat very cautiously initially, and give yourself plenty of time to get used to its handling on and in the water. Don't let it get too far away from you - you must never lose sight of the boat!

We hope you have many hours of pleasure running your GRAUPNER U-16 model submarine.

Fault-finding, possible solutions

Radio control system has no range	• Transmitter battery almost flat; fit new battery • Model battery almost flat; recharge battery • Aerial not extended; pull out to full length
Transmitter LEDs do not light up, although new battery is fitted	• Battery connected incorrectly. Insert battery with correct polarity
Green LED on transmitter does not light up	• Flat transmitter battery; fit new battery
Model runs more slowly than usual, fails to run straight ahead, or is difficult to steer	• Battery in model almost flat; recharge immediately Debris tangled in the propellers; clean propellers immediately
Charger no longer charges the battery correctly; green power-on LED does not light up	• Flat batteries in charger; fit new batteries
Flood tank cannot be adjusted, drive motors still work, green LED in conning tower off	• Battery in model almost flat; recharge immediately

You will also need the following items (not included in the kit)
1 x 9 V block battery for the transmitter, Order No. 98865
6 x C-size dry cells for the charger, Order No. 3429