

Guide For The FEDA Mini-Helicopter

Thank you...

For purchasing Feda model helicopter. This is a mini electric R/C model helicopter that makes indoor flying a practical reality as well as flying outdoor in calm weather. The updated technology plus extensive R&D ensure incredible flight performance/flying time even when using a standard 4 channel R/C transmitter.

Please understand...

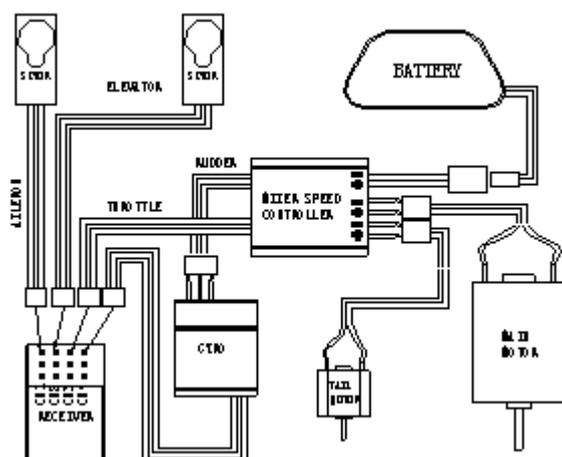
This R/C model is not toy. It should not be flown irresponsibly or without due regard for other people or property.

Flying the model helicopter is not difficult but requires patience and practice. If you are a newcomer to R/C model helicopter, you should seek advice from your local model club or store before flying. Feda and its distributors will not be hold liable for your loss or damage from misuse or improper operation of the model.

Product guarantee...

We guarantee this product to be free of defects in materials or workmanship for a period of SIX months from date of purchase. Users assume all responsibility for the proper use and operation of this product and no warranty is expressed or implied regarding the care and operation of this product.

Items include in the kit...



The model has been assembled within factory and packed in box before shipment. Check carefully items inside box and inform us immediately when you find parts lost or damaged.

Main Technical Data:

Rotordiameter: 510cm

Length: 500cm

Max all-up-weight: 300g

Battery: Ni-Mh,7cell,8.4V

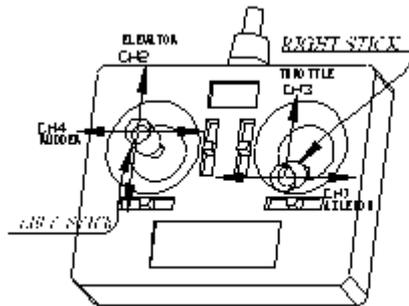
Tools required : Metric ruler or Vernier

Needle nose pliers

Accessories recommended:

4-ch-transmitter,2 micro-servos, piezo-gyro, batteypack, charger

Use batteries....



When charging new batteries, charging current should never exceed 0.35A. when model landing slowly and failed to fly up again or when model staying on the ground, rotor speed slow down or servos lost of control, the barriers require to be recharged.

Notice...

Check with your dealer for the frequency available for your particular country. Radio frequency laws vary from countries to countries. Different brand of R/C transmitters and receivers may arrange channel (CH1,2,3,...) sequence differently. Check your R/C manual for operation. Channel sequence in this guide is for operating Feda models.

Glossary

For newcomers to model helicopter flying, we will explain some special terms and a little theory

MECHANICS

The sum of all components in the helicopter chassis (including the main rotor, drive gears, frame, shafts and rods)

SWASHPLATE:

This is the connection device for the cyclic control. It consists of the outer ring, a bearing and an inner plate. The outer ring is connected to servos and does not revolve itself. Servo movements are directed by means of the swashplate through to the rotor head, or main rotor.

MAIN ROTOR:

This is responsible for steering the helicopter in flight. It consists of rotor head, rotor blades, flybar and flybar paddles. Cyclic control commands are sent via the swashplate through to the head.

ROTOR BLADES:

These are the rotating 'wings' of the aircraft. They generate lift and allow the machine to fly.

FLYBAR PADDLES:

These serve a dual function: they both stabilize and steer the main rotor blades. The paddles are operated by the swashplate and associated linkages.

TAIL ROTOR:

This rotor generates the thrust required to counter the torque generated by the main rotor. The tail rotor controls the helicopter about the yaw axis.

SERVOS:

These are highly geared motor and electronic units that control the swashplate.

SPEED CONTROLLER:

This is the electronics device that controls the power delivered to the main/tail electric drive motors.

RECEIVER:

Receives control commands from your transmitter and sends appropriate signals to servos and speed controllers.

GYRO:

This is an electronic stabilization device. It senses motion. In helicopters, it usually stabilizes the helicopter roll, dampening unwanted yaw inputs, thus greatly simplifying flying.

Basics

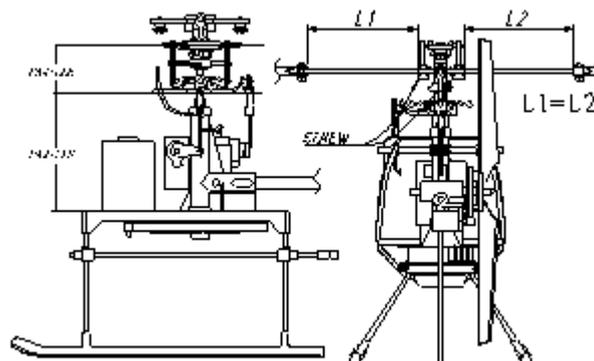
How does a Fedra helicopter fly?

A helicopter generates its lift from rotating wings (the rotor blade). As engine speed is increased, the main rotor revolves faster and therefore generates more lift. Conversely, as motor speed is reduced; lift is also reduced. However, a motor driven rotor system generates torque that acts on the helicopter fuselage. Twisting the fuselage in the opposite direction to the main motor. This torque is countered by thrust generated by a smaller rotor on the tail (tail rotor). The blades that comprise the tail rotor have a certain pitch angle that, when rotating at a given speed, generate thrust and balance exactly the main motor torque. By increasing or decreasing the speed of the tail rotor and hence varying the thrust generated, the helicopter yaw either left or right.

At this point, we have covered two of the functions required to control a helicopter. The first: height control, via an increase or decrease in main motor speed. The second: yaw control, by speeding up or slowing down the tail rotor. A model helicopter must also be controlled about two further axes: roll and pitch.

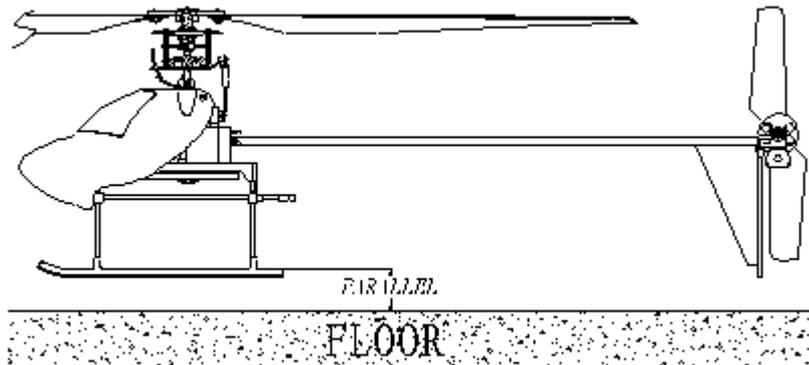
This task is undertaken by the cyclic control system. The system consists of servos, swashplate, flybar paddles and main rotor blades.

The servos are connected to the lower swashplate ring. The upper swashplate is connected to flybar paddles. When a servo moves, it tilts the swashplate and the control input is fed by pushrods 'cyclically' up into the main rotor system. Note that the swashplate is connected (via linkage) to the flybar and the angle of the paddles is altered as a result. At this stage, think of a helicopter as a flying disc. The paddles and blades together actually resemble a disc in flight.



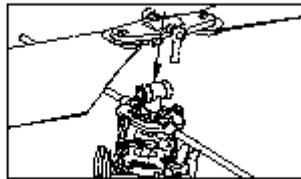
The cyclic controls are responsible for steering the helicopter by tilting the disc in flight. The disc can be tilted forwards/backwards or left/right. For example, by pushing the cyclic stick forward in flight, the disc is tilted forwards and the nose of the helicopter drops. The cyclic control system can

move the disc forwards, backwards, left or right and hence



direct the helicopter in a very precise way. Two servos are responsible for cyclic control; one servos for roll control(left and right) and one for forwards and backwards control(fore and aft).

Assembling



Include towards the rear of the manual is an exploded view of the model. Use this as a guide during construction. If you are in any doubt about which parts should be used during construction, refer to the exploded view and take note of the descriptions and dimensions of the required parts

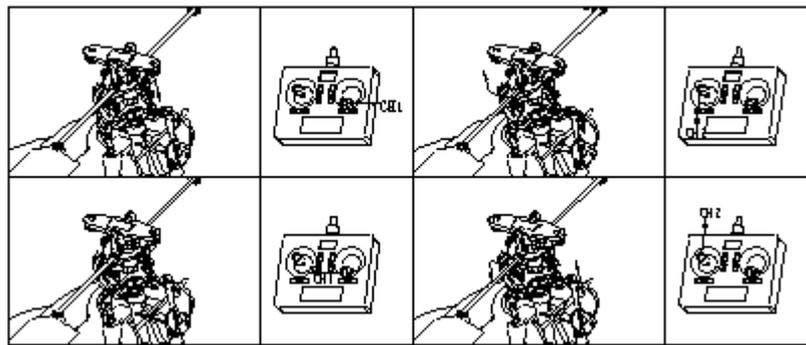
1. According to illustration 3 adjust flybar paddles until the two paddles have same length ($L1=L2$) and insure
2. Next, use the scheme illustrated on the box as a guide and connect all of the leads with double-sided tape except for the flight battery. lead the receiver antenna out of the cabin area and attach it with tape to one of the skids. Leave approximately 10 cm of it hanging free. This is most important and must be carried out exactly.
3. Now attach the flight battery to the underside of the shelf with a rubber band. You can attach the rubber band to the canopy on the chassis for this purpose. Shift the battery forward or rearward to adjust the balance. Move the battery until the model balances lever when suspended by the flybar.
4. The canopy can now be mounted. For this, push the two rubber grommets into the body molding if you have not ready done so.
5. When mount the rotor blades, make sure they are not over-tightened. They need to be tight enough to prevent then pivoting into the helicopter when they are at rest. They must be able to center under their own weight when the head rotates. If they are too tight, the helicopter

can shake and vibrate. If they are too loose, the helicopter will be unstable as the blades spin up.

Adjustment:

Only turn on the transmitter after you are sure that the throttle is in the low stick on power off position and that your transmitter throttle reversing switch (if present) is correctly set.

Severe damage or personal injury may result if the drive battery is connected at high throttle settings. Keep fingers, loose clothes and eyes well clear of the rotatable parts whenever you connect the flight battery to the model.



Step 1. Centre all the trims. Move the right throttle stick to the lowest position. Turn on the transmitter. Make sure CH3 channel is set correctly.

Step 2. Plug the flight battery into the speed controller. Let the machine sit for approximately 5-7 seconds until the LED illuminates. Do not move the machine while the system is calibrating.

Step 3. When controller LED glows green, the electronics are active. Hold the right throttle stick (CH3) in the power off position and check the operation of cyclic controls. Move the elevator stick back and forth and make sure the swashplate moves in the right direction. Move the stick from side to side and confirm that it operates the swashplate correctly. Check the integrity of all controls—right through to the correct operation of the flybar paddles.

Now gently apply a tiny amount of throttle ensuring that fingers, eyes and loose objects are well clear of all rotating parts. The main rotor will begin to rotate first, then the tail rotor. Throttle down again and unplug the flight battery.

Guide to flying

If you are a beginner, it is highly recommended that you seek assistance from a professional R/C model helicopter pilot. Please see the special notes for newcomers in the opening section of this manual. Correct flight trimming is essential for successfully learning to fly with the model.

WARNING:

Before attempting to operate your model you should be aware that the main rotor blades and tail blades can rotate at very high speeds and therefore can inflict severe damage or injury to people or property.

Therefore always take the most care with your preparation to ensure that there is no possibility of damaging anything.

Especially, keep small children and animals well clear of model helicopter at all times!

FLYING ENVOIREMENT:

A suitable flying site is required. Initially, a large room or a small meeting hall without obstacles is ideal.

Make sure that the air in the room is still. Ensure that there are no drafts from open doors or windows. We also recommend a flat, smooth floor (such as tiles) so that the skids can slide. Avoid carpet as it may catch the skids cause a tip over.

N.B. The following flight notes are intended as a guide only and are not intended to replace proper flight instruction provided by a suitable qualified R/C model helicopter pilot.

Step 1

1. Place the helicopter in the middle of the floor. Before you turn on the transmitter, make sure that the throttle stick is set to the power off position and that the cyclic trims are centered.
2. Turn on the transmitter.
3. Plug the flight battery into the model. After waiting for the LED to activate, test that the servos are operating properly
4. If everything is working correctly, position yourself (and others) at least 2 meters behind the helicopter and a little off to one side. Be sure you can see the nose of the helicopter. Watch the nose. Slowly apply enough throttle until your model becoming light on its skids.
5. All helicopter exhibit a small amount of unavoidable drift at take-off due to the side thrust of the tail rotor and the clockwise rotation of the main blades. This is mainly noticeable as drift to the left just before and during take off.
- 6.

N.B. It is possible that the machine will tend to yaw its nose to the left or right when a small amount of power is applied, then straighten out with more power, then yaw the other way with still more power.

This cannot be corrected with trim and indicates that the model tail rotor mixer is not properly adjusted. The mixer controls the rotation speed of the tail rotor relative to the speed of the main rotor in order to neutralize main rotor torque.

After this, you will probably need to readjust the transmitter tail rotor trim

With a little throttle, the helicopter should begin to get light. Observe whether or not the helicopter wants to tip forward or backward. If it tips forward, trim the elevator trimmer rearwards(vice versa). Do this until there is no detectable forward or backward tipping when you give even a little more throttle. Be careful! The helicopter can easily climb all the way to the ceiling if you let it. Therefore be sure that you throttle up and down slowly.

STEP 2

1. Lift the helicopter off ground for a while:
Use the procedure we have already learned: Slowly apply throttle, let the machine 'get light', increase throttle until the model lifts off., watch for trim changes (keep the helicopter 100MM off ground) and land at the first sign of instability or vibration or if you are losing control. You are now learning to fly your model and thorough practice is required from now on.
2. Put the model in the middle of your flying area, or a little to the right of the middle. Many champions started out exactly the same way, so don't lose patience! Remain your model 300MM off the ground as this is the best position while training. Always make sure that the tail rotor is pointed at you but focus your attention on nose direction, not the tail. After practice, you will notice that your flights become longer and you will be 'saving' the helicopter by grounding it less and less.

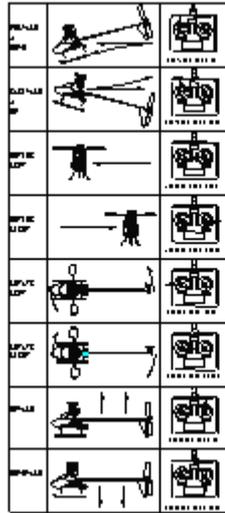
You will also notice this effect when flying in small spaces: after a few minutes, the helicopter will have gotten the air circulating and the flight will be bumpy. Just land for a little while and let the air calm down.

NOTE: Keep in mind , though that a helicopter always exhibits some drift. This is the nature of helicopters and you will always have to make small flight corrections with your transmitter. Try to manage the flight with as little correction as possible. The sooner you notice a drift and correct it , the smaller the control input you will need.

STEP 3:

1. This is the introduction to forward flight. Periodically stop the machine and hold it in a hover. Start to attempt to yaw the tail to one side then the other(still remaining behind the helicopter with the tail at 45 degree angle to yourself.
2. Star experimenting with attitude. At this point you have flown the model in a variety of conditions using a variety of training techniques. You should able to slowly fly the helicopter, achieve a stable hover, stop and go again. And vary the altitude. Now you are ready to combine all of this into an entire flight. If you have the space, you can 'walk' the model around.
3. As you may have noticed, takeoffs are a little easier than landings. This is due to ground – effect turbulence. However spot landings at a modest rate of descent are not as difficult as they might seem. Try it once but gently. The model is not always upset by a hard landing. In fact if it very strong though not

indestructible.



4. Next you might want to go outside and fly in an open space. If you have a big yard and a calm weather, it's the right environment. Start slowly and make sure you keep the nose facing away from you. At first go through the motions as before. Make sure the hover is stable. Make sure the cyclic is stable when sudden throttle is applied(that the helicopter does not come at you or away from you). That the tail rotor is stable and that height control is smooth and controllable.
5. Now if your skills have developed satisfactorily, try developing a feel for tail rotor control by carefully yawing the helicopter through different angles. Patience and practice are your best tools here also. If you practise diligently, you will soon master the nose-in hover. This is the situation the helicopter faces towards you

Congratulations! You have become a qualified pilot through all practice. You should now learn that altitude instead of the ground is your refuge in case of trouble. The helicopter is now a fully functional flying machine in your hands. We recommend you master the difficult maneuvers outdoors and only do them indoors once you are comfortable with them.

In a short time you should be flying and landing wherever you want to. With some practice you will be flying through open doors and impressing your friends.

However as a pilot it is your primary duty to be careful and fly safely and responsibly at all times. You should never endanger yourself, other people, property or your helicopter.

Remember there are old pilots and there are bold pilots. But there are no old ,bold pilots.

We will continue to update and upgrade the helicopter for you. Simply request our latest information or catalog.

We wish you lots of fun and many flights with your FFF helicopter.

飞达直升机备件表 FEDA MINI-HELICOPTER PARTS LIST					
图号 No.	名称 Product name	用量 Amount	图号 No	名称 Product name	用量 Amount
5001	机 架 Main Frame	1	5026	软胶头 Soft Rubber Head	2
5002	尾 架 Tail Frame	1	5027	尾固定翼 Tail Wing	1
5003	尾马达齿轮 Tail Gear Small	1	5101	主马达 Main Motor	1
5004	主马达齿轮 Main Gear Small	1	5102	尾马达 Tail Motor	1
5005	主动齿轮 Main Gear Big	1	5103	轴承 D3 Bearing D3	4
5006	尾动齿轮 Tail Gear Big	1	5104	轴承 D7 Bearing D7	1
5007	稳定翼片 Balance Wing	2	5105	轴承 D2 Bearing D2	2
5008	滑 撬 Landing Ski	2	5106	控制杆 Control Bar	2
5009	支架连板 Bracket Board	2	5107	主 轴 Main Axes	1
5010	PCB 座板 PCB Seat Board	1	5108	销 子 Dowel	2
5011	倾斜外盘 Slant Tray Outside	1	5109	支 杆 Landing Bar	4
5012	倾斜内盘 Slant Tray Inside	1	5110	尾防护杆 Thin Tail Bar	1
5013	控制内盘 Control Tray Inside	1	5111	机壳支杆 Cover Support Bar	1
5014	控制外盘 Control Tray Outside	1	5112	支架连杆 Landing Bar linkage	2
5015	双孔连杆 Double Holes Link bar	2	5113	稳定翼杆 Balance Wing Bar	1
5016	单孔连杆 Odd hole Link Bar	2	5114	尾 管 Thick Tail Boom	1
5017	主旋转头 Rotor Head Assemble	1	5115	尾 轴 Tail Axes	1
5018	旋转头 Rotor Head	1	5116	圆头螺丝 Screw Circular Head	4
5019	连动件 Linkage Set	1	5117	圆头螺丝 Screw Circular Head	2
5020	连杆头 Link Pole head	2	5118	圆头螺丝 Screw Circular Head	2
5021	尾旋翼 Tail Rotor	1	5119	螺 母 Nut	2
5022	主旋翼 Main Rotor	2	8120	垫 圈 Gasket	2
5023	机 壳 Plane Cover	1	8121	垫 圈 Gasket	2
5024	软胶管 D2 Soft Glue Pipe D2	1	5122	垫 圈 Gasket	2
5025	软胶管 D1 Soft Glue Pipe D1	8	5123	锁紧螺丝 Screw	2
5201	双面贴 Double paste	5	5202	电池 8.4V600MAH Battery Pack	1
5301	混控调速器 Mix/Control Speed	1	5124	铜齿轮 8Z Copper Gear 8Z	1
			5125	铜齿轮 10Z Copper Gear 10Z	1