

Eco7

Bedienungsanleitung User's Manual Notice d'utilisation



CONTENTS:

I.	QUICK INTRODUCTION.....
I.	THE ECO 7 – ELECTRONICS.....
III.	FLYING WITH THE ECO 7.....
IV.	GIGATRONIC – SHORT INTRODUCTION.....
V.	DISSASSAMBLING / MAINTENANCE.....
VI.	TROUBLE SHOOTING.....
VII.	LIST OF REPLACEMENT PARTS AND EXPLODED VIEWS.....
VII.	ACCESSORIES.....

SET CONTENTS:

ECO 7 set with transmitter

Completely assembled and adjusted helicopter
4/6 channel – transmitter incl. batteries and crystals
Rechargeable flight battery and fast battery charger
DVD with flying and operating instructions
GigaTronic control software and interface cable

ECO 7 set without transmitter

Completely assembled and adjusted helicopter
Rechargeable flight battery and fast battery charger
DVD with flying and operating instructions
GigaTronic control software and interface cable

ECO 7 kit

Completely assembled helicopter
with main and tail motor
DVD with flying and operating instructions

It is very important to read these instructions carefully before setting up your helicopter !

- 1. Before you can start up your helicopter, insert the batteries into the transmitter and charge the rechargeable flight battery with the battery charger enclosed.**
- 2. If you have purchased an Eco 7 set without a transmitter, keep in mind that a standard-sized single conversion crystal (not included) still has to be inserted into the receiver (see. Chapter V.8 Remove Gigatronic).**
- 3. Please note that the rechargeable flight battery will not yield its full power until about the fifth recharge.**
- 4. For transporting and shipping the ECO 7 always remove the battery from the model – breakage risk!**

Watch this DVD for further information on handling and programming the ECO 7 .

TECHNICAL SPECIFICATIONS:

Fuselage Length:	93 cm(36.6´´)
Rotor Diameter:	96 cm(37.8´´)
Flying Weight:	1450 g(3 lbs, 3oz)
Battery: NiMh	7-9 cells /8-12V
Lipoly	3 cells / 11,1 V

General safety instructions for the operation of electric model aircraft.

Both these instructions and the assembly and operating instructions must be read carefully before the initial operation of the model.

Model aircraft are not children's toys. Know-how is required for their construction and especially for subsequent handling. Mistakes and carelessness during assembly and subsequent handling can lead to serious damage to persons and property. Since manufacturers and vendors have no influence on the proper assembly and handling of the model, these dangers are explicitly pointed out and any liability for damages to persons, property, or otherwise is excluded.

Assembly and handling of the model should only be carried out by adults or under adult supervision and control.

Follow the assembly and operating instructions meticulously. Altering the assembly or not observing the operating instructions will result in the loss of any warranty claims. Contact an experienced model aviator for assembling and handling the model, ideally a club or flight school.

We recommend that you take out a liability insurance policy for operating the model. Further information about this is provided by the clubs, too. Even a model assembled exactly as outlined in the instructions can represent a danger. Never reach for the rotating propellers or rotor blades or other exposed moving parts, or severe injuries may occur. Passers-by and bystanders must keep a sufficient safety distance.

While you fly the model, do not perform any sudden control stick movements. Never fly towards persons or animals, and never fly over them. Keep away from power lines. Do not operate the model on public streets, squares, schoolyards, parks, playgrounds, etc. Keep the minimum distance from inhabited areas as stated for each model. As a standard guideline, every model aviator must behave in a way so public safety and order, persons and objects, and the orderliness of the model air traffic are not put at risk or disturbed.

Use only the reverse polarity protected pin connector systems provided. Reversing polarity will lead to short circuits. Short-circuited rechargeable batteries may explode. Use only rechargeable batteries of the officially required cell amount and capacity. By using too many cells, you may overload the electromotor, causing it to burn out, catch fire, or cause radio interference.

The propeller or rotor blades or the propeller mounting system may tear and the fragments can fly away in all directions at high speeds. Trouble-free operation is not possible with too few cells.

Always use fully charged batteries. Land the model in time before discharged batteries lead to a malfunction or an uncontrolled crash. Examine the RC - system for flawless operation before every flight – for example, rudder swings must move the right way. Before turning on your model, make sure the channel it is tuned to is, in fact, used by no one but yourself.

Take care of clear takeoff and landing areas. Observe the model constantly.

The tools required for assembly can cause injury.

Be aware that there is also a risk of injury handling parts that are broken or that have not been deburred.

Glues and lacquers may contain harmful substances such as solvents. Observe the instructions of the manufacturer and wear protective goggles if required.

Warranty procedure:

We warrant our products for workmanship and material for 6 months after purchase date. The purchase receipt serves as a voucher for the beginning and the expiration of this warranty. No receipt - No warranty. Potential repairs do not prolong the warranty period. We will remedy operating malfunctions, production or material defects that occur during the duration of warranty period. Further claims such as for consequential damages are entirely excluded. No warranty claim will be accepted if the item or model has failed due to an accident, incompetent handling, alterations, incorrect or commercial use. The use of any non-Ikarus parts is voiding the warranty.

If you ship an item for warranty or other repair service the shipment has to be insured and shipping cost prepaid. The return shipment to you will be charged. Freight collect shipments will not be accepted. We will not assume liability for any damages incurred during transport of your shipment. We are not liable for loss of your shipment.

CUSTOMERS IN THE USA AND CANADA PLEASE NOTE:

In the case of further questions or if you wish to order replacement parts please call 1-239-690-0003
We can be reached Monday through Friday from 8:00 AM through 4:30 PM EST

<i>Ikarus Germany</i>	<i>Ikarus France</i>	<i>Ikarus USA</i>
<i>Im Webertal 22</i>	<i>19, Rue Desaix</i>	<i>5876 Enterprise Parkway</i>
<i>78713 Schramberg-Waldm.</i>	<i>Strasbourg Nord</i>	<i>Billy Creek Commerce Center</i>
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<i>E-mail: info@ikarus.net</i>	<i>E-mail: info@ikarus-france.com</i>	<i>E-mail: info@ikarus-usa.com</i>

I. Quick introduction

Congratulations on purchasing your Eco 7. To enable you to start right away, the following items must be checked off and the following programming steps must be carried out.

1. On delivery, the transmitter should be set to "Mode 2," that is, pitch/throttle and the tail rotor on the left-hand steering unit, the forward pitch and roll function on the right-hand side. If you have the set without a transmitter or if you wish to modify these settings, read Chapter II, "Channel Assignment."
2. There is a red and a blue adhesive strip on the decal sheet included that must be glued to the blade tips of the rotor blades to enable you to set the tracking later on.
3. The rechargeable flight battery will be able to develop its full power only after having been charged and discharged several times.

Tip: For the first 5 times that the flight battery is charged, we recommend you discharge the battery by simply hovering / flying around with the ECO 7.

4. When starting up the helicopter, an operational test must be carried out every time, that is, the swash plate – viewed from behind – has to move exactly like the control stick of the corresponding operation, that is, roll right = swash plate sloped to the right, etc. If any functions moving the wrong way, you can reverse the polarity at the transmitter side with the Reverse switch.

However, this should be performed only with the flight battery unplugged.

5. Affix the flight battery inside the Eco 7 diagonally, using the rubber strap with the holes and pull it over the top of the battery and secure it to the pin provided for that purpose at the landing gear strut.
6. Turn on the transmitter now and check if the Pitch/throttle function is set to lowest position. Now connect the flight battery to the helicopter.
7. Before takeoff, you should adjust the tail rotor. Proceed as follows: Turn tail rotor function all the way left and hold until you receive a confirmation by the tail rotor (tail rotor performs one full rotation). The tail rotor gyro is adjusted now.

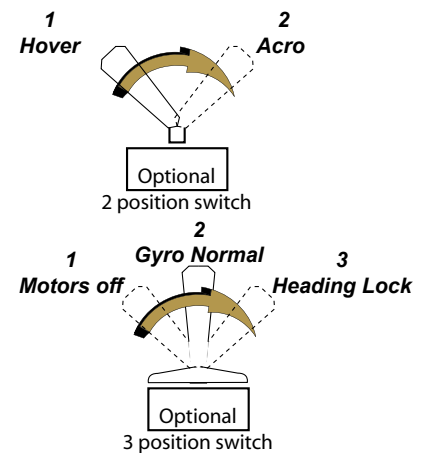
Tip: If the tail rotor drifts away because of outside influences, this procedure can be repeated at any time (on the ground ONLY).

8. Slowly increase Throttle/Pitch now. The rotor will slowly accelerate to its operational rotary speed due to the integrated soft startup system. The tail rotor will start up along the first 10% of the control stick path. On delivery, the gyro is programmed in heading lock mode. It is normal for the tail rotor to start up only once the tail changes its position on the ground or after takeoff.
9. We recommend that beginners carefully read Chapter III, "Flying with the Eco 7" in order to learn about flying faster and more safely.
10. After flying, you should keep in mind that the battery of the helicopter must be unplugged first, and the transmitter switched off afterwards. The helicopter should always be transported in its case without the battery. The battery can be stowed away in the cut out section provided for that purpose on the left-hand side of the styro case (otherwise the fuselage of the ECO 7 may get damaged).

II. ECO 7 ELECTRONICS

All operating parameters are saved inside the GigaTronic of the ECO 7. This ensures that every model, independent of the transmitter, (most transmitters of other manufacturers can be used as well) has its optimal operating environment, eliminating the complex task of setting up the transmitter. The electronic circuitry automatically recognizes how many channels the transmitter uses; so, for example, if only 4 channels are transmitted, it automatically switches to 4-channel operation.

The minimum configuration is 4 channels. Two flight phases, “hover” and “acro” have been preset already and can be toggled between in mid-flight by expanding the transmitter to 6 channels. Pitch curves, throttle curves, tail mixing as well as gyro and heading lock sensitivity are preset. You can choose the flight phases with the optional two-position switch (channel 5). The optional three-position switch (channel 6) is for the operating modes Motors OFF gyro mode Normal or Heading Lock. If no flight phase switch is available, the normal flight phase “hover” and “heading lock mode” are set. Accidentally switching off the motors in mid-flight is, of course, impossible.



Channel assignment at the transmitter

Deactivate all mixers and set trimmers to center position; if necessary, turn optional 2 and 3-stage switches to the end position. At least 4 proportional channels are required. More switching channels for the operating mode/flight phases or a special function are optional. If pitch is set all the way forward and back again, the channel assignments and the control stick centers that have been determined up to that point are saved. Hence Step 10 must be performed after confirmation of the last channel for transmitters with fewer than the possible maximum of 9 channels. Channels that may be received but are not assigned will be ignored and have no function.

- 1.) Leave transmitter switched off, and turn on receiver by plugging in the flight battery. The main and tail motors will remain off. (The electronics automatically prevent them from starting up if the receiver is switched on before the transmitter.)
- 2.) Turn trim levers to center position, push both control sticks into any corner and hold, turn on transmitter and hold control sticks until the confirmation signal (tail rotor turns).
- 3.) Release control sticks, then turn Pitch to position minimum, wait for confirmation signal. (Note: after releasing the control sticks, most of the time Pitch is already in minimum position. In that case, the second confirmation happens anyway, without further actions.)
- 4.) Move Tail stick into any end position, such as to the right, wait for confirmation signal, release tail.
- 5.) Move Forward Pitch stick into any end position, wait for confirmation signal, release stick.
- 6.) Move Roll stick into any end position, wait for confirmation signal, release roll.
- 7.) Toggle two-position switch from “hover” to “acro” wait for confirmation signal, toggle back switch.
- 8.) Move three-position switch into any position, wait for confirmation signal, turn back switch.
- 9.) Where applicable, toggle additional switches (special function) back and forth the same way as in step 7.) and wait for confirmation signal in between.
- 10.) For completion, move Pitch all the way forward and back again. The subsequent confirmation signal is noticeably longer now than the previous ones.

Please note:

- After the **channel assignment, the servo's operating direction must be checked!** By toggling the reverse-switch the functions Pitch, Tail, Forward Pitch, and Roll can be inverted if necessary. This should only happen while the device is switched off!
- If the transmitter is replaced, a readjustment of the control stick center may be necessary. This should only happen while the transmitter and GigaTronics are switched off!

Transmitter trimming

Every model requires its own trimming. By trimming at the transmitter side, the model can be trimmed for neutral flying. Computer transmitters offer the possibility of saving the specific model settings. Because these values are, as mentioned before, specific to the model, it only makes sense to save them in each model rather than for the transmitter. The GigaTronic offers this possibility. The trimmers at the transmitter side can remain in neutral position at all times that way, and mainly serve fine-tuning on the airfield.

How to proceed

The model has been trimmed to neutral by adjusting the transmitter trimmers.

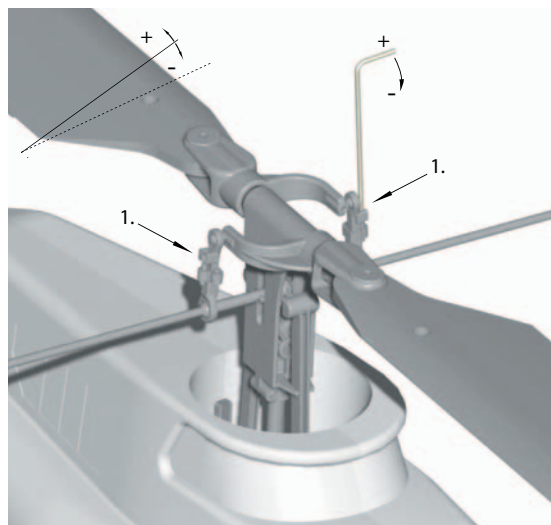
Land the model and wait until the main rotor stops. Now push the tail stick all the way to the left. After about two seconds, the gyro correction will be confirmed. After five more seconds, trim saving will then be confirmed. This is when the trimming settings are being transferred and saved. Initially, the affected servos will then move into a off position in relation to the trimming difference. The moment the transmitter trimmings are back in the neutral position, the servos positions, too, will be correct again. This process can be carried out many times in a row; in this case, the differences from the trimming center will be added up. In order to avoid boundary errors, the transmitter trimming is limited to a max. of +/- 25%.

Erasing transmitter trimming

If the tail stick is held all the way to the left at minimum pitch for approx. 10 seconds, the transmitter trimming will be erased after the 3rd confirmation.

Fine tuning, tracking

When replacing the rotor blades or after prolonged operation of the ECO 7, it may become necessary to adjust the blade tracking. Slowly accelerate and increase the turning speed to the point when the ECO 7 is just about to take off, but does not. Observe the rotor plane from the side now, pay attention to the blade tips. If you recognize (as depicted) a difference between both blades, you should make a note of which blade runs along the upper plane. The blade tips are colored differently, so take note of the color of the blade which runs too high. Shut down the rotation again. Adjust the blade angle of the blade that is too high with the Allen key now. The blade angle is adjusted by a linkage of the paddle pushrod near the blade holders. Turn the screw (1) of the higher-running blade clockwise. Proceed with care, half a revolution or one revolution may well be enough for offsetting a full centimeter. If the tracking difference was more than a centimeter, we recommend not just to lower the blade running too high but to raise the blade running too low as well. Turn the screw of the lower running blade counterclockwise for this. Reexamine the tracking now – as outlined above – and correct the adjustments until both rotor blades run in one plane. Next, examine the tracking during a hover flight, preferably with an assistant concentrating on the rotor blade plane while you navigate.



III. FLYING WITH THE ECO 7

The first bounce

Take some time for the first bounces and attempts at flying in order to develop a feeling for controlling the copter. Anybody can learn to fly a model helicopter.

One preparation that can still be made at home is the assembly of the optional training undercarriage # 67960, which can be attached to the copter skid frame using cable ties. The footprint size of the undercarriage increases that way, preventing the helicopter from tipping over easily.

Turn on the transmitter first, and then plug in the charged battery. Next put down the ECO 7 with its front (nose) facing the wind and away from you. Then accelerate slowly until the copter starts "floating" on the floor, that is, until it gets lighter. Make it a habit of always looking at the copter's nose, never the tail. Hence, if the nose wants to turn right move the tail rotor stick left and vice versa.

Later on, you should turn your attention to the forward pitch and roll control. Perhaps, while you were approaching the "lift-off limit," you have been able to observe clearly defined directions the copter veers towards. For example, if the main rotor plane always leans to the back and the right, perhaps pulling the copter away on the grass, then trim the forward pitch servo towards the front and the roll servo to the left. Here, too, it is essential never to simply make the copter take off vertically. The correct trimming position can only be achieved if a clear inclination to its swerving is recognizable. If this is not the case, you may start navigating. For safety reasons, the copter should be trimmed in a way that its preferred inclination is forward and that it never flies backwards in your direction.

Hover flight practice

Here, you should always have the copter approach the lift-off threshold first until it breaks free from the ground by a few centimeters. Do not attempt to do anything other than slow down the first movement you detect by correcting it. If this does not work right away, slowly decrease the pitch again and touch down the ECO 7. Carry the copter back to its starting position.

Once you are able to keep the copter steady hovering over one spot, start directing the model consciously, first along an imaginary line 5 yards to the left, hovering there for a short while, then back to the starting point. Repeat the same exercise to the right. Practice this to the front and to the back as well using the forward pitch control. Before attempting a round flight, you should be able to master hovering.

The Aerofly Professional flight simulator by IKARUS is a real help for beginners and advanced flyers practicing round flights and acrobatic flying figures.

THE IKARUS TEAM IS WISHING YOU LOTS OF FUN AND ENJOYMENT FLYING THE ECO 7!

IV. GIGA-TRONIC

GIGATRONIC QUICK INTRODUCTION

Gyro drift correction

Preparation:

- Model on the ground. Motors off.
- Tail stick all the way to the left. After approx. one second; "CONFIRM."

Gyro is newly adjusted, veering off by the tail is minimized.

Erase model trimming

*This operation is useful if changes in the mechanical system or the servos are about to be performed.
The model trim settings are set to zero.*

Preparation:

- Model on the ground. Motors off, Mode set to Off.
- Tail stick all the way to the left for approx. 10 seconds.
- After one second; "CONFIRM" (gyro correction), keep holding tail stick all the way to the left.
- After six seconds; "CONFIRM" for model trimming.
- After four more seconds; "CONFIRM" for trim deletion.
- Swash plate moves back by trim difference.

Model trim settings in are erased.

Model trimming

This operation is useful if changes in the mechanical system or the servos have been performed and the model is meant to be retrimmed.

Preparation:

- Have model take off and trim to hover flight. Land model.
- Model on the ground. **Motors off**, switch Mode to **Off**.
- Tail sticks all the way to the left for approx. 6 seconds.
- After one second; "CONFIRM" for gyro correction, keep holding tail stick all the way to the left.
- After six seconds; "CONFIRM" for trim saving.
- Swash plate moves by the trimming difference.
- Set trimmers forward pitch and roll to center.

Model trim settings are now saved

Take-off preparation

- (Optional) switch Flight phase to Hover, Mode to Off.
- Set pitch to center.
- Turn on transmitter.
- Plug in receiver battery.
- Put down helicopter.
- Set pitch to minimum; system initialization commences.

System is operational; LED flashes green.

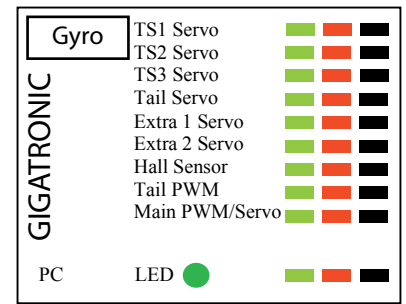
- Check operation and effective direction pitch and swash plate.
- (Optional) switch Mode to Heading Lock, LED glows green.

System is ready to go.

New channel assignment

Preparation of the transmitter:

- Turn off all servo reversals.
- Turn off all mixers.
- Set all trimmers to center.
- (Optional) switch Flight phase to Hover.
- (Optional) three-position switch to setting Motors Off.
- (Optional) additional switches / channels to setting Off.
- Turn off transmitter.



Programming:

- Plug in receiver battery. LED flashes red.
- Push both transmitter control sticks into any corner and hold.
- Turn on transmitter; wait for “CONFIRM.”
- Release control sticks and move pitch to minimum position; “CONFIRM.”
- Tail stick all the way to the right; “CONFIRM,” release tail.
- Pitch forward stick all the way to the front; “CONFIRM,” release pitch forward.
- Roll stick all the way to the right; “CONFIRM,” release roll.

Optional:

- Switch Flight phase to Acro; “CONFIRM,” back to normal.
- Three-position switch Mode to setting Heading Lock; “CONFIRM,” back to motors Off.
- Successively toggle additional switches; “CONFIRM,” back.
- Set Pitch all the way to the front and back again, long “CONFIRM.”

Programming finished. (Signal: disconnected); LED flashes green.

Adjusting swash plate

This operation is useful if the servos have been replaced. With roll (right, center, left) the servo is chosen, with forward pitch the zero setting is changed.

Preparation:

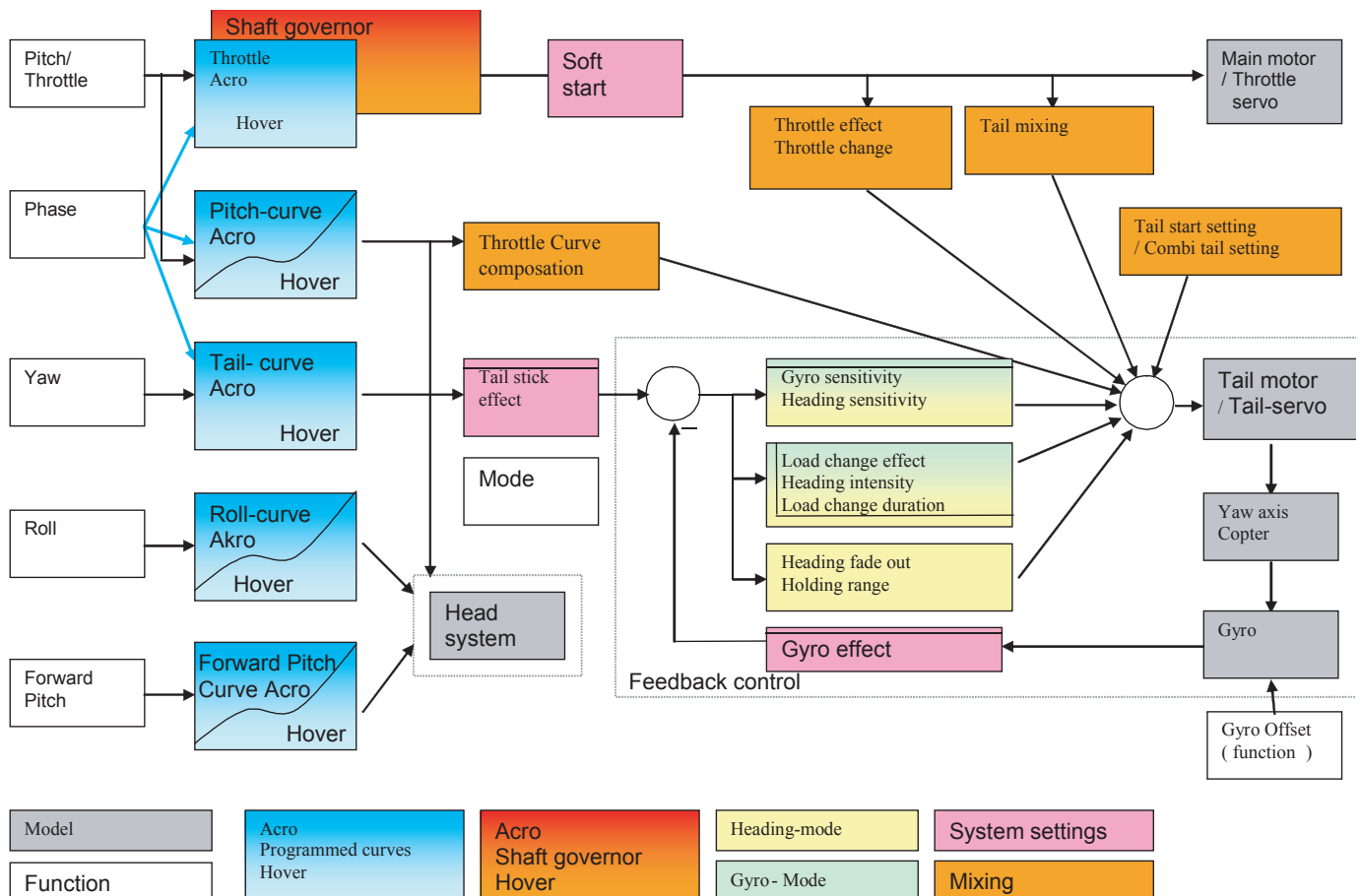
- Center all transmitter trimmers.
- Turn off transmitter.

Adjustment procedure:

- Plug in receiver battery. LED flashes red.
- Push forward pitch and roll sticks to any side and hold.
- Turn on transmitter; wait for “CONFIRM.”
- Set pitch to maximum; wait for “CONFIRM.”
- Pre-select with roll servo (Right, Center, Left)
- Change zero position with forward pitch (full deflection) until the swash plate stands horizontal and at the correct height. The center of the adjustment range is displayed with “CONFIRM.”
- Pitch to minimum finishes adjustment and saves the new settings.

After this adjustment the model must be retrimmed, for this purpose erase model trimming first.

GigaTronic System Flow Chart

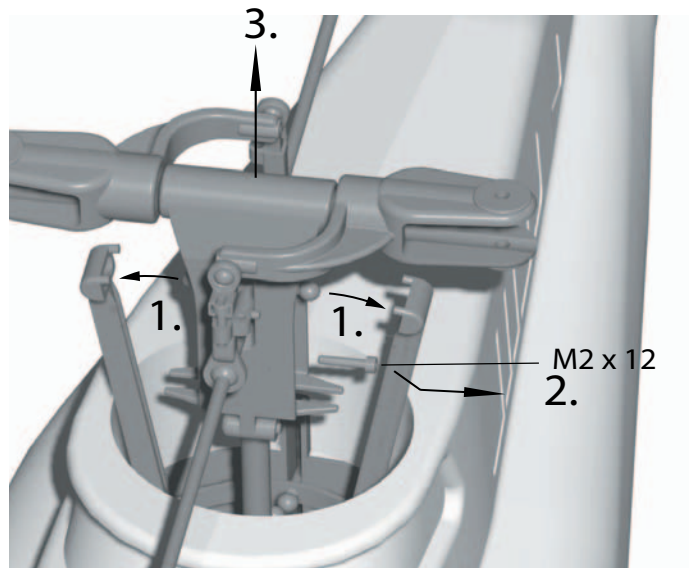


V. DISASSEMBLING AND MAINTENANCE

1. DISASSEMBLING THE ROTOR HEAD

In order to be able to disassemble the mechanics, the rotor head must be separated from the rotor shaft first. Here, first remove the rotor blades using the proper tools. Remove the Hiller pushrods from the ball of the flybar. Remove the rotor head holding screw M2 x 12 and both self-tapping screws 2.9 x 9.5. You can now pull the rotor head off the main rotor shaft.

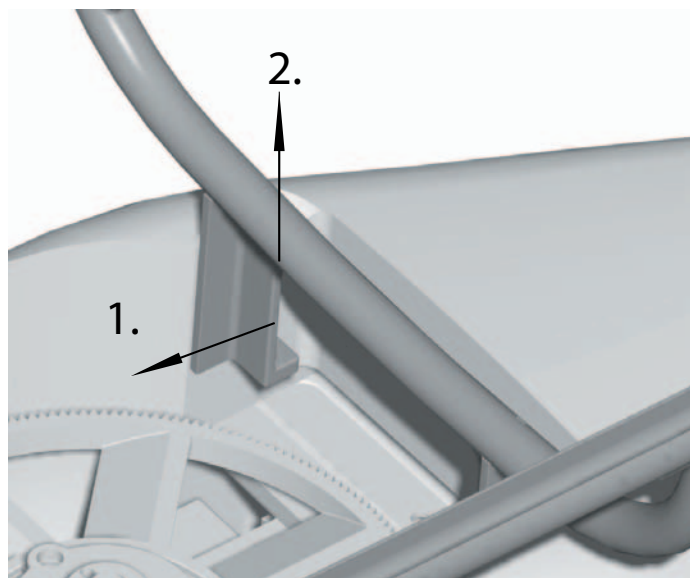
1. Unhook Hiller pushrod
2. Loosen screw
3. Pull off rotor head



2. DISASSEMBLING SKID LANDING GEAR

Next, pull the antenna out of the antenna tube near the skid landing gear and push the skid landing gear struts out of the chassis holding rails in order to extract them.

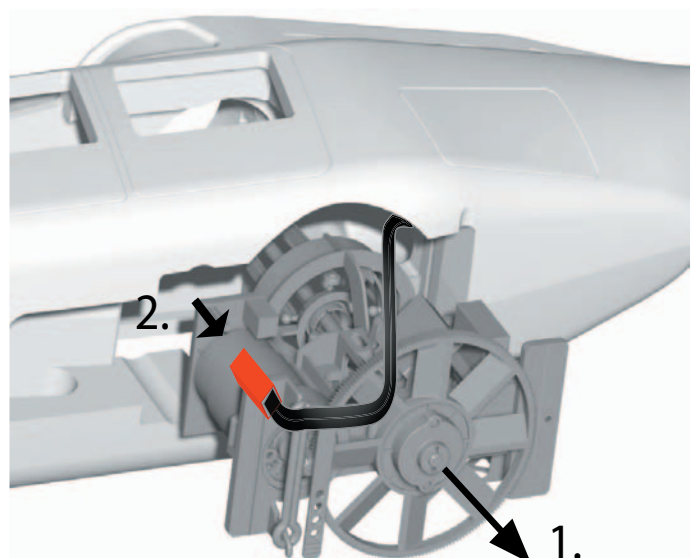
1. Using a screwdriver leverage skid landing gear struts out of the holding rails in the front and in the rear .
2. Remove skid landing gear.



3. REMOVING THE MECHANICS

By applying pressure (from above), you can now take out the mechanics from below. While doing this, pay attention to the cable connecting the tail motor and pull it off.

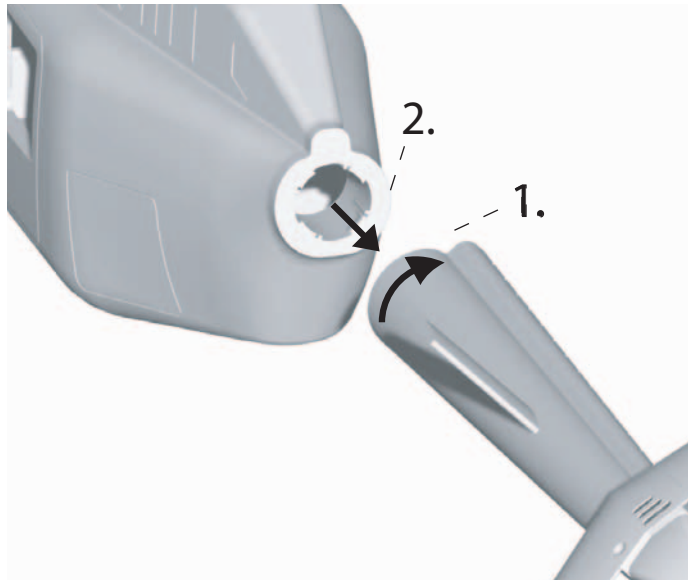
1. Carefully pull mechanics a little out of the fuselage.
2. Disconnect tail motor plug; extract mechanics.



4. DISASSEMBLING THE TAIL BOOM

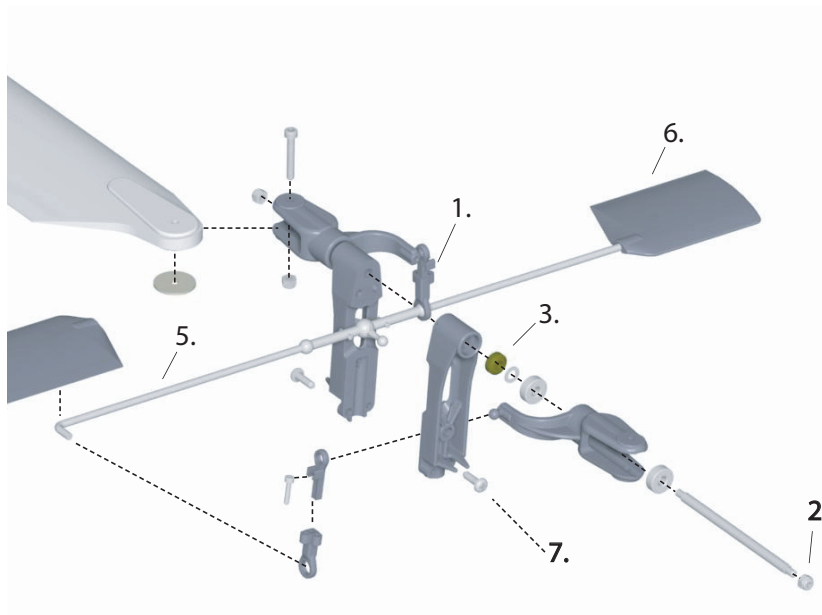
If the tail has to be removed, turn the bayonet joint of the tail boom to the right and separate it from the fuselage. In the process also carefully pull the cable out of the fuselage.

1. Turn tail in arrow direction
2. Remove tail



5. DISASSEMBLING THE ROTOR HEAD

Separate the upper part of the Hiller paddle pushrods (1) from the ball of the blade holder arm. Remove the self locking M3 nuts (2) inside the blade holders from the blade bearing shaft. Remove the rubber rotor head damper (3) from the center hub. Unscrew the two Philips-head screws (7) from the rotor head center hub now and remove the flybar (5). The Hiller paddles can now be snapped off from the flybar. Assembly should be performed in reverse order. Observe the post-assembly position of the flybar and the blade holders for this purpose.



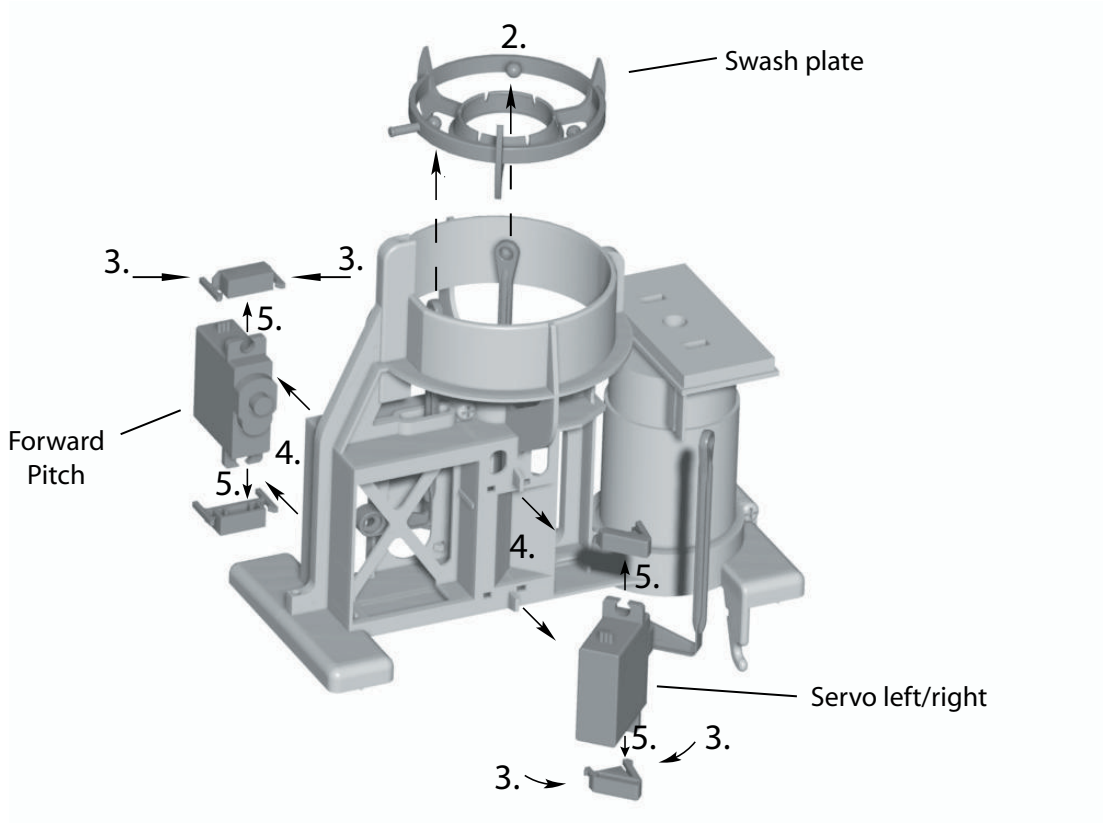
PLEASE NOTE:

DURING ASSEMBLY KEEP IN MIND THAT THE RUBBER DAMPERS #6073046 ARE ASSEMBLED WITH THE CHAMFERED SIDE FACING OUT. BY LIGHTLY LOOSENING THE NUTS THE RIGIDITY OF THE DAMPING CAN BE ADJUSTED.

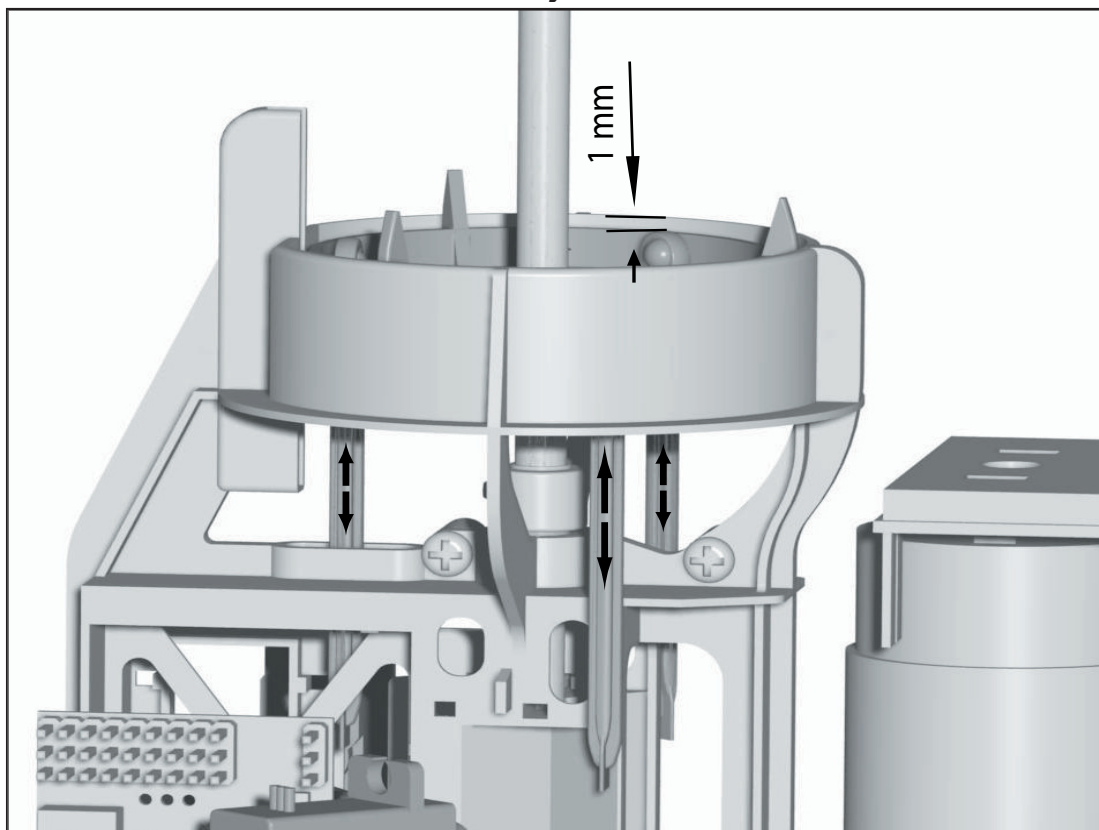
RECOMMENDED DAMPER SETTING:

FASTEN NUTS #67581 TO THE STOP POSITION AND THEN LOOSEN THEM AGAIN BY ONE TURN.

Servo installation



Servo Adjustment



6. REMOVAL AND CHANGING SERVOS

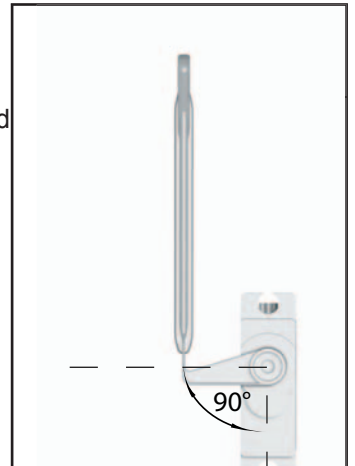
Roll servos front right and left

Pull servo plug off of electronics (remember servo plug location). Remove servo pushrod from swash plate, unlock the servo by pushing it in arrow direction and remove it from the mechanics (see "Servo installation" on previous page)

Forward pitch servo

Pull servo plug off of electronics (remember plug location), detach servo pushrod from the swash plate and remove servo from the mechanics by pushing pins together.

- Pull servo plug off of electronics
- Detach servo pushrod from swash plate and remove swash plate
- Unlock holding clamps by applying pressure in direction of the arrow
- Pull out servo
- Take off holding clamps



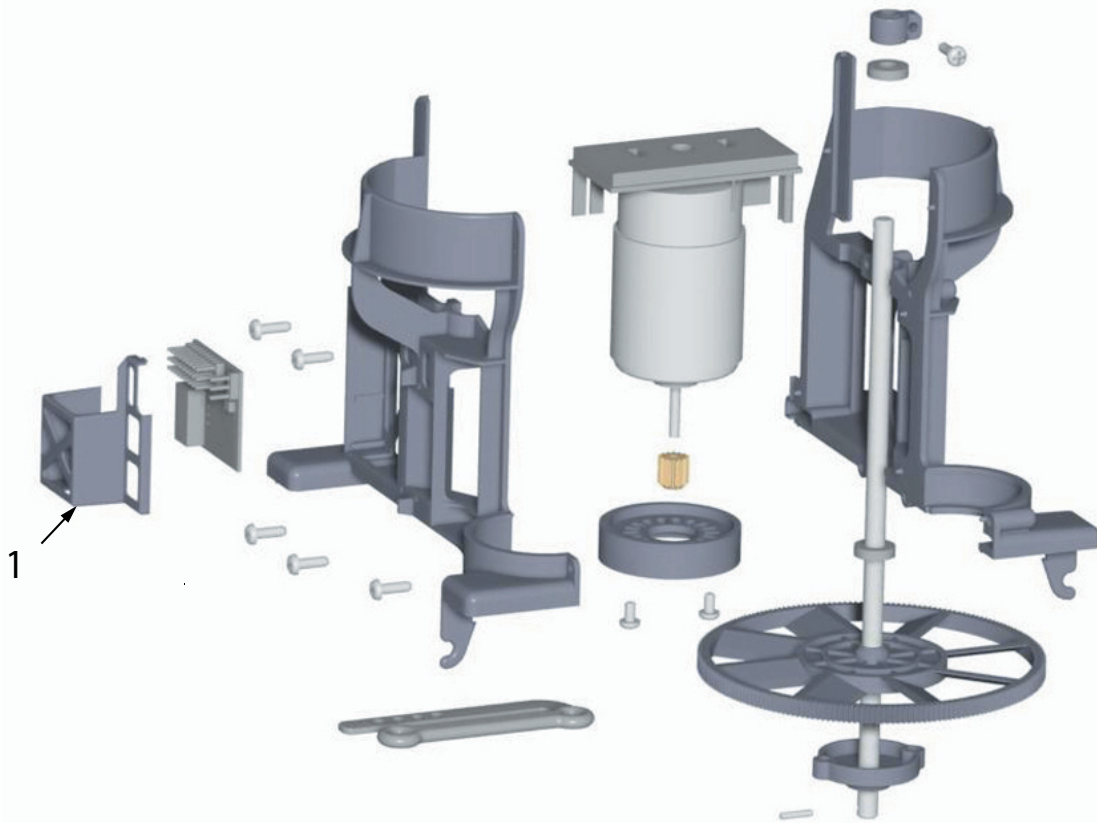
Servo assembly and adjustment

If servos are installed or replaced, the trimming memory should be purged and then the servos should be readjusted (See Chapter IV).

After replacing a servo, the center position must be newly adjusted and saved in the GigaTronic memory. This is vital for the pitch and throttle curves to remain unchanged. Proceed as outlined in Chapter IV. Adjust the servos in such a way that the ring of the swash plate is positioned all way around approx. 1mm below the edge of the guide ring.

7. CHASSIS AND ROTOR SHAFT

After the rotor head has been removed, the rotor shaft collar can be detached and the main rotor shaft can be



pulled downwards out of the chassis. Now press on the shaft so you can remove the cross pin out of the gear holder and pull the main gear off the shaft. By loosening the 5 screws, the chassis can be opened and the motor can be removed. Assembly is performed in reverse order, take care to position the motor correctly for this.

8. REMOVAL OF THE GIGATRONIC

1. Carefully snap off electronics cover 1 (see above illustration)
2. Take out GigaTronic and pull off servo plug

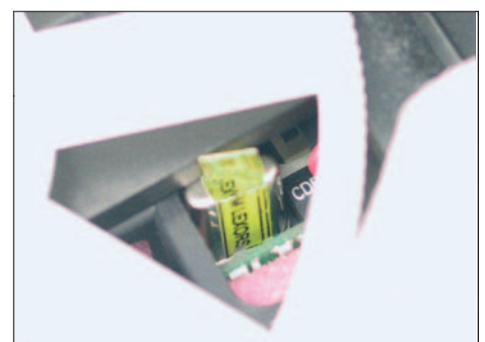
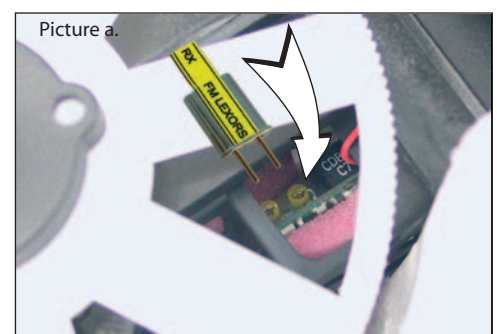
Receiver removal

The FM receiver can be pulled off of the processor board.

Replace receiver crystal

The receiver crystal is plugged in and can be replaced. With the GigaTronic in its assembled state, the crystal can be inserted and removed with the aid of a pair of tweezers. (see illustration a)

When reassembling, make sure that the foam damping encloses both circuit boards and the receiver crystal.

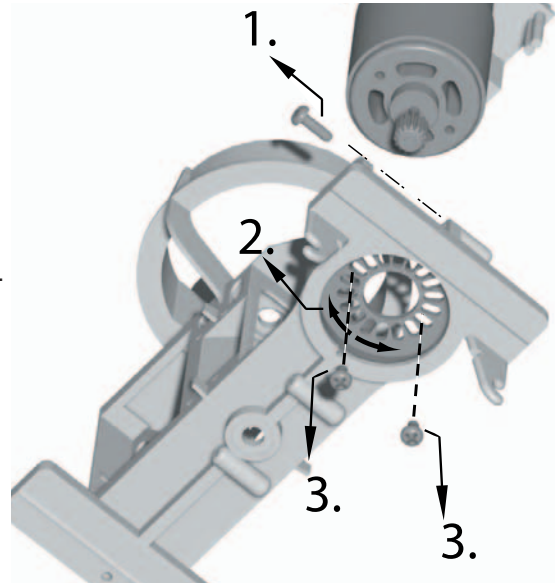


9. REMOVE MOTOR

Loosen screws No.3 and detach motor

10. GEAR MESH ADJUSTMENT

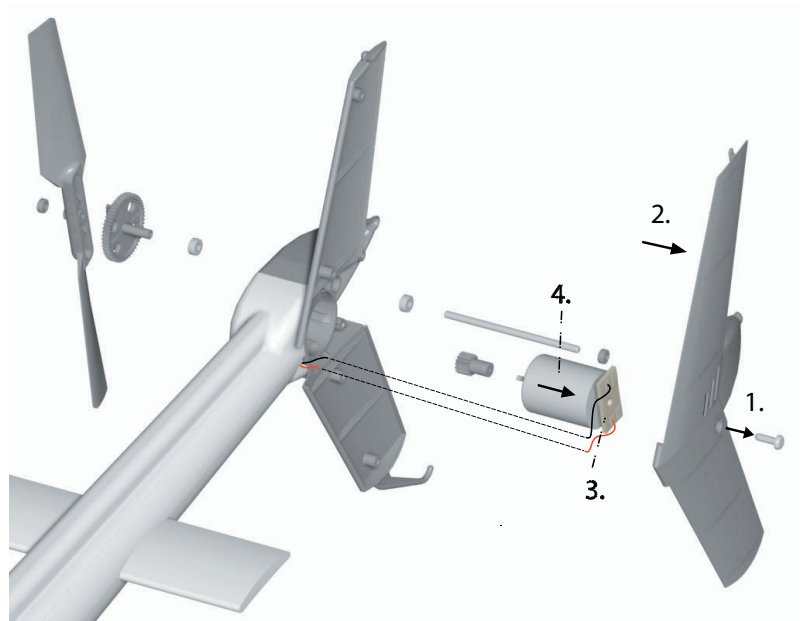
1. Loosen front chassis screw No.1.
2. Adjust gear mesh by twisting the motor (Excenter).
3. Loosen screws No.3 and take off motor.
4. Screw motor back in.
5. Refasten front chassis screw.



11. REMOVE TAIL MOTOR

In order to open the tail casing, cut the decal near the leading edge of the vertical tail fin..

1. Loosen screw No. 1.
2. Carefully pull off cover No. 2.
3. Unsolder connecting cable No. 3.
4. Carefully push out tail motor No. 4.



12. DISASSEMBLE TAIL ROTOR

Detach left tail gear casing from right one by carefully separating the parts. Pull the shaft securing rings off of the tail rotor shaft and take out shaft incl. tail rotor blade.

13. DEACTIVATE MOTORS FOR MAINTENANCE WORKS

The motors must always be deactivated for maintenance work!

- Pull tail motor power plug off of power board.
- Pull main motor cable out of slot 9 (GigaTronic).
- Do not pull tail motor controll cable off the Power Board, us it supplies power to the GigaTronic

System check after a crash:

- Examine main rotor shaft, tail rotor shaft, blade bearing shaft and flybar for runout.
- Examine servos for gear damage.
- Examine all rotating parts (rotor blades, blade holders, tail rotor, etc.) and the pushrods for fractures and damage.

In case of repairs

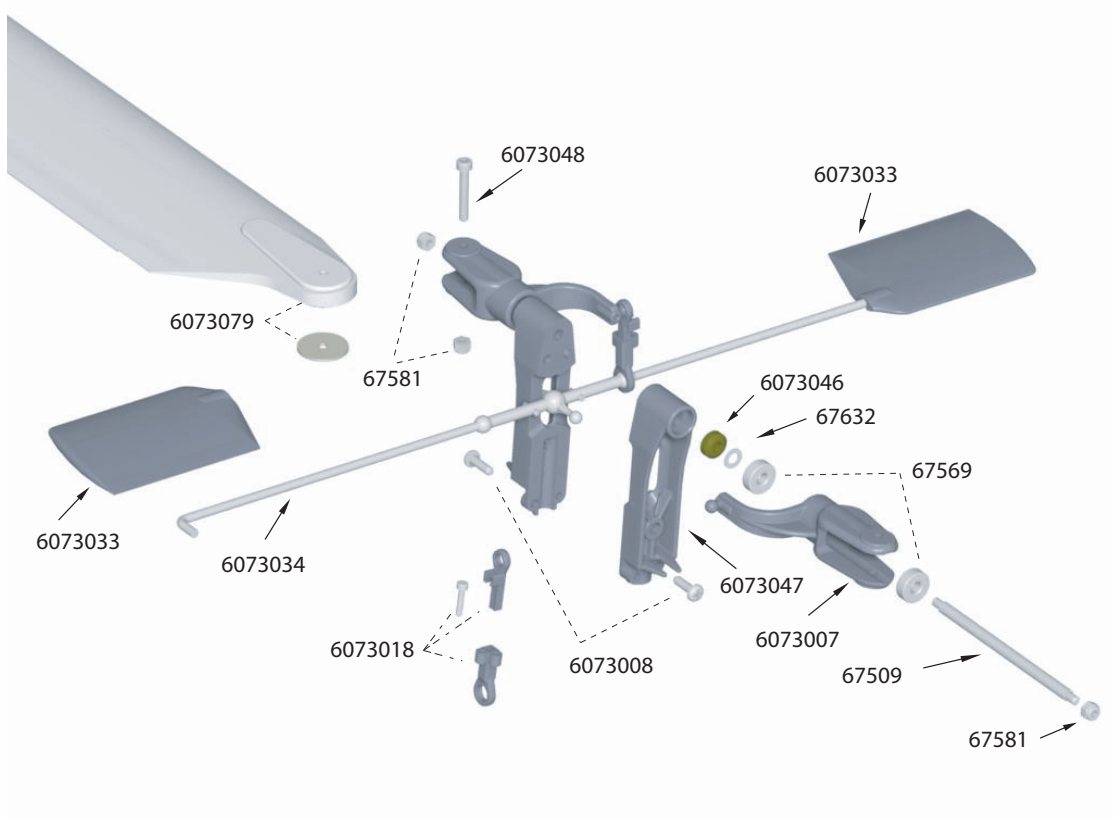
Please remember that you must not to use glue containing solvents for fuselage fractures. Two-component glues such as epoxy resin, odorless CA glue or Uhu Por have proven to be useful. Ethyl alcohol is very good for removing dirt. Please pay attention to safety instructions of the manufacturer.

VI. TROUBLESHOOTING

QUESTION	POSSIBLE CAUSE	EFFECT	REMEDY
SERVOS AND MOTORS DO NOT WORK	CRYSTALS DEFECTIVE	NO SIGNAL AT RECEIVER; ELECTRONICS RECOGNIZE THE DEFECT AND DEACTIVATE MOTOR AND SERVOS	REPLACE CRYSTALS
	TRANSMITTER NOT SWITCHED ON		SWITCH ON TRANSMITTER
SERVOS AND MOTORS DO NOT WORK	THROTTLE/PITCH STICK NOT IN IDLE POSITION	THE ELECTRONICS NOTICE A DEFECT AND PREVENT THE MOTORS FROM STARTING UP	MOVE PITCH CONTROL STICK TO IDLE POSITION
SERVOS AND MOTORS DO NOT WORK	IF A SIX-CHANNEL TRANSMITTER IS USED THE SWITCH POSITION IS NOT CORRECT	THE ELECTRONICS NOTICE A DEFECT AND PREVENT THE MOTORS FROM STARTING UP	SET 2-POSITION AND 3-POSITION SWITCHES TO FLIGHT PHASE "HOVER" RESPECTIVELY TO "MOTOR OFF"
SLOPPY TAIL CONTROL	MODEL WAS MOVED HEAVILY DURING CALIBRATION PROCESS	TAIL DRIFTS OFF	AFTER LANDING RECALIBRATE GYRO: MOVE THROTTLE STICK TO IDLE AND HOLD TAIL STICK LEFT FOR 2 SEC.
HELICOPTER VIBRATES	MAIN ROTOR BLADES OUT OF TRACK	VIBRATIONS ARE AMPLIFIED THE HELICOPTER VIBRATES HEAVILY	READJUST TRACKING AS OUTLINED IN MANUAL
	MAIN AND/OR TAIL ROTOR SHAFT BENT (CRASH?)		CHECK AND REPLACE ROTOR SHAFT(S)
	FLYBAR BENT OR TWISTED		REPLACE OR STRAIGHTEN FLYBAR
	ROTOR BLADES OR PADDLE NOT BALANCED		REBALANCE ROTOR BLADES, CHECK PADDLES FOR CHIPS AND REPLACE IF NECESSARY
HELICOPTER WOBBLER	ROTOR HEAD REVOLUTIONS TOO LOW TOO MUCH AND/OR DIFFERENT BLADE PITCH	BLADES ARE STALLING	TIGHTEN BOTH BLADE HOLDER ADJUSTMENT SCREWS EVENLY FOLLOW SETUP INSTRUCTIONS. GRUNDEINSTELLUNG BEACHTEN.
	BATTERIES DEFECTIVE OR INADEQUATE FOR OPERATION	MOTORS AND ELECTRONICS OPERATE POORLY	REPLACE BATTERIES
ROTOR HEAD SPEED COLLAPSES AT MAXIMUM PITCH	PITCH PUSHRODS ADJUSTED INCORRECTLY	SYSTEM WORKS AT POOR EFFICIENCY	BOTH BLADE HOLDER ADJUSTMENT SCREWS TOO FAR OUT. TIGHTEN EVENLY FOLLOW SETUP INSTRUCTIONS.

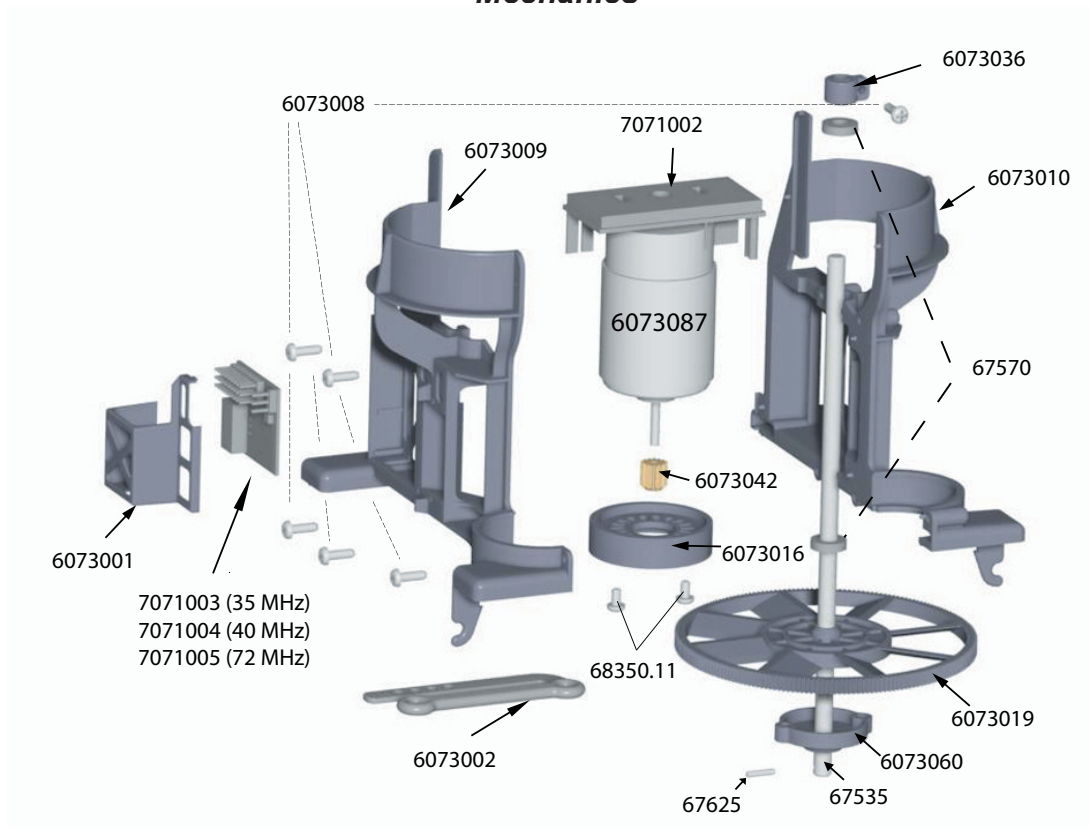
VII. LIST OF REPLACEMENT PARTS AND EXPLODED VIEWS

Rotor Head



Qty.	Ord. No.	Item Description	Specifications in mm
	(sorted by ord. no.)		
2	6073007	BLADE HOLDER, 2 PCS.	
2	6073008	SELF TAPPING SCREW, 10 PCS.	2.9 X 9.5 ISO 7049
2	6073018	ADJUSTABLE PUSHROD, 2 PCS.	
2	6073033	HILLER PADDLE, 2 PCS.	
1	6073034	FLYBAR WITH SEESAW	
1	6073044	MAIN BLADE COVERING SLEEVE, 78 IN.	
2	6073046	ROTOR HEAD DAMPENERS, 4 PCS.	
2	6073047	ROTOR HEAD CENTER HUB	
2	6073048	MAIN BLADE HEX SCREW, 10 PCS.	
2	6073079	MAIN ROTOR BLADES COVERED (1 PAIR)	
1	67509	BLADE BEARING SHAFT W/NUTS	4 X 66
4	67569	BALL BEARING, 2 PCS.	4 X 11 X 4
4	67581	SELF-LOCKING NUT M3, 20 PCS.	
1	67583	SELF-LOCKING NUT M2, 10 PCS.	
2	67632	WASHER M4, 20 PCS.	
1	68216	ALLEN SCREW M2 X 12, 4 PCS.	

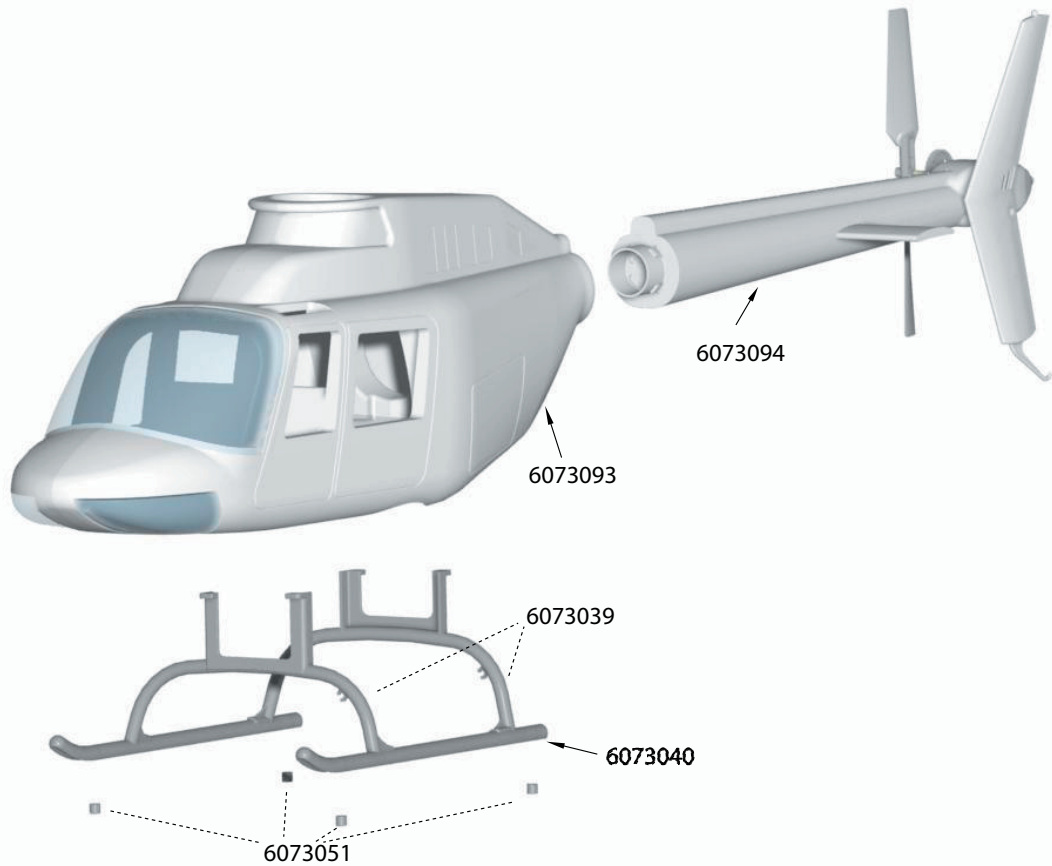
Mechanics



7071003 (35 MHz)
7071004 (40 MHz)
7071005 (72 MHz)

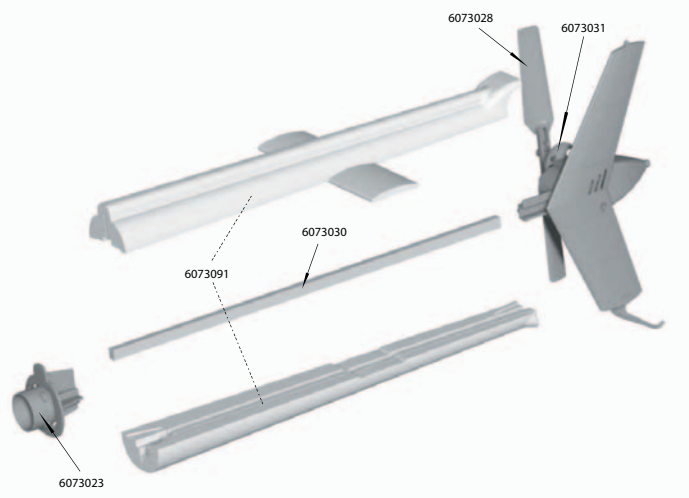
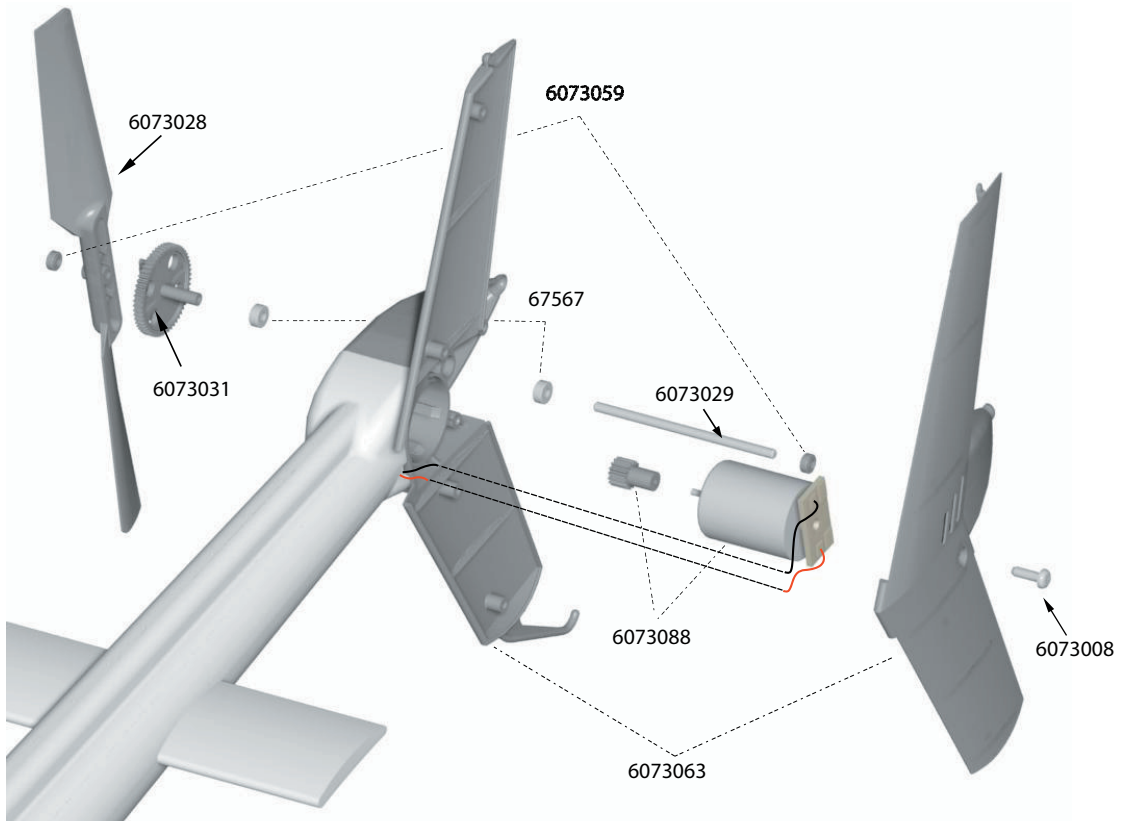
Qty.	Ord. No.	Item Description	Specifications in mm
	(sorted by ord. no.)		
1	6073001	COVER FOR ELECTRONICS BOX	
2	6073002	ELASTIC BATTERY STRAP, 2 PCS.	
6	6073008	SELF-TAPPING SCREW, 2 PCS.	22,9 x 9,5 ISO7049
1	6073009	LEFT CHASSIS , BLACK	
1	6073010	RIGHT CHASSIS, BLACK	
1	6073015	DAMPENING FOAM FOR ELECTRONICS	
1	6073016	MOTOR MOUNTING RING	
1	6073019	MAIN GEAR	200Z, m 0,5
1	6073036	COLLAR WITH SET SCREW	
1	6073042	MAIN MOTOR PINION 16 T, BRASS	
1	6073060	GEAR HOLDER (W/O FREEWHEEL)	
1	6073087	MAIN MOTOR W/PINION	
1	7071002	POWERBOARD E7	
1	7071005	FM-RF RECEIVER 72 MHZ	
1	67535	MAIN SHAFT	6 x 179mm
2	67570	BALL BEARING, 2 PCS.	6 x 12 x 3
1	67625	PIN, HARDENED, 3 PCS.	2 x 10
2	68350.11	PHILLIPS HEAD SCREW, 5 PCS.	M3 x 4

Fuselage and Landing Gear



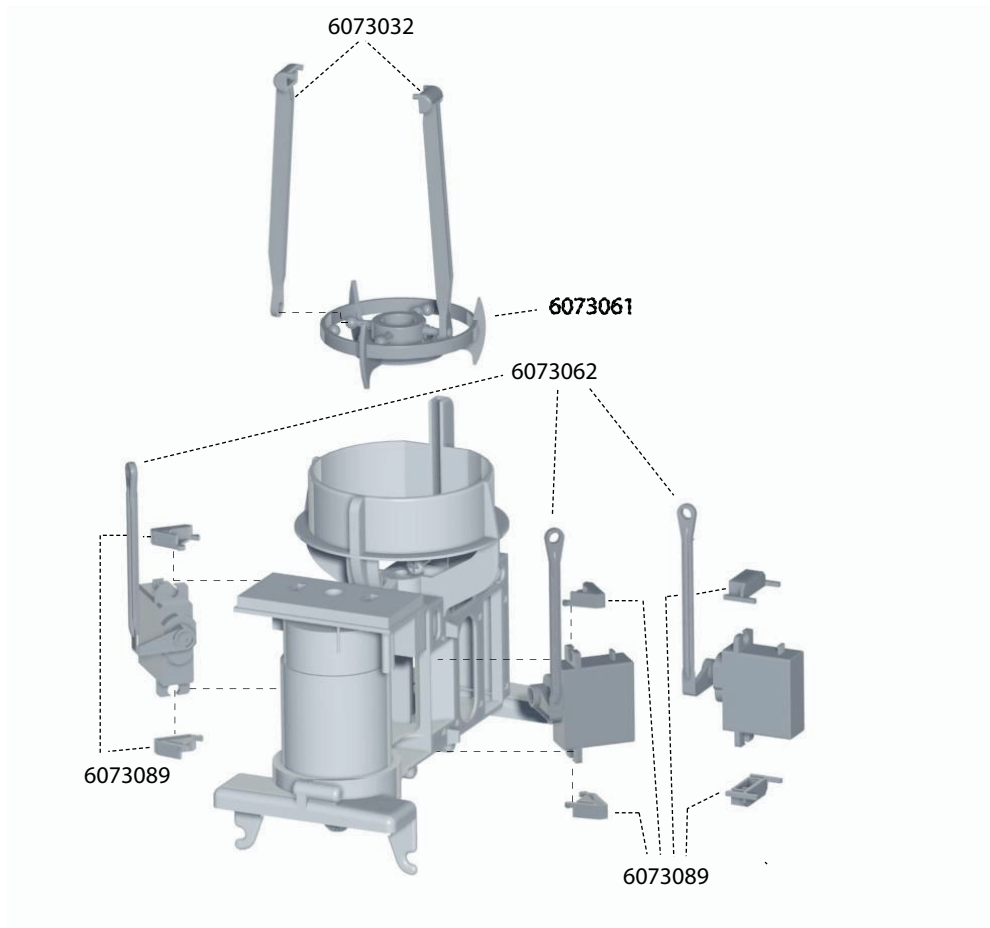
Qty.	Ord. No.	Item Description
	(sorted by ord. no.)	
1	6073004	ANTENNA TUBE
1	6073013	DECAL SHEET ECO 7 COMPLETE
1	6073035	WINDOW SET JET RANGER
1	6073039	LANDING GEAR STRUT SET
2	6073040	LANDING GEAR SKIDS W/ ANTISKID INSERTS
4	6073051	ANTISKID INSERTS, 10 PCS
1	6073090	CHASSIS HOLDING RAIL, FRONT & REAR
1	6073091	ECO 7 JET RANGER TAIL SECTION
1	6073092	ECO 7 JET RANGER FRONT SECTION
1	6073093	COMPLETE FRONT FUSELAGE W/ DECAL
1	6073094	COMPLETE REAR FUSELAGE W/ DECAL

Tail Boom



Qty.	Ord. No.	Item Description	Specifications in mm
	(sorted by ord. no.)		
1	6073008	SELF TAPPING SCREW, 10 PCS.	2,9 x 9,5
1	6073022	FRONT PART TAIL CONNECTOR	
1	6073023	REAR PART TAIL CONNECTOR	
1	6073028	TAIL ROTOR BLADE	
1	6073029	TAIL ROTOR SHAFT	
1	6073030	TAIL REINFORCEMENT SPAR	
1	6073031	TAIL GEAR	
2	6073059	TAIL ROTOR SHAFT HOLDING RINGS, 5 PCS.	
1	6073063	COMPLETE TAIL GEAR HOUSING.	
1	6073088	TAIL MOTOR W/PINION	
1	6073091	UPPER & LOWER TAIL BOOM SECTION	

Servo Pushrods



Qty.	Ord. No.	Item Description
	(sorted by ord. no.)	
2	6073032	FLYBAR PUSHRODS, 2 PCS.
1	6073061	COMPLETE SWASHPLATE
1	6073062	SERVO PUSHROD SET TYPE 1, 3 PCS.
1	6073089	SERVO HOLDING CLAMP SET TYPE 1, 3 PAIRS

VIII ACCESSORIES



Item Description	ORD. NO.
EXTENSION CHANNEL 5 2-POSITION-SWITCH (FLIGHT PHASES)	170009
EXTENSION CHANNEL 6 3-POSITION-SWITCH (MOTOR CUT OFF)	170010
AUTOROTATION FREEWHEEL	6077001
MAIN ROTOR SHAFT, HARDENED	67940
BLADE BEARING SHAFT, HARDENED	67942
TRAINING UNDERCARRIAGE	67960
ECO 7 CHARGER WITH TAMIYA CONNECTOR	7013005
SERVO NARO MAX	720366
GIGATRONIC E7	7071001
POWERBOARD E7	7071002
FM-RF RECEIVER (72MHZ)	7071005
PROGRAMMING SOFTWARE GIGATRONIC	7071007
7 CELL NIMH RECHARGEABLE BATTERY	8013001
9 CELL NIMH RECHARGEABLE BATTERY	8013002

***You will find charging and discharging instructions in your battery charger manual
Our batteries have been factory tested . Since we have no influence on the handling
of the batteries, we do not offer any warranty on the batteries.***

***THE ECO 7 COMES INSIDE A PRACTICAL CARRYING CASE FOR THE HELICOPTER,
TRANSMITTER, BATTERIES, BATTERY CHARGER, TOOLS, ETC.***

