

TWISTER SKYLIFT

WORLDS' FIRST EVER!

READY TO FLY 4 CHANNEL R/C TANDEM ROTOR HELICOPTER

Assembly & Flight Training guide



**TEST-FLOWN &
FLIGHT-GUARANTEED**

So you know it flies!

SPECIFICATIONS

Main rotor diameter	34cm (13.4ins)
Fuselage length	50cm (19.75ins)
R/C transmitter	35mHz FM 4 channel with 4 trims
Cyclic steering	hi-torque EnerG micro servos
On-board power	11.1V Li-polymer (with cell balancer)
Weight	approx 400g
Flight time per charge	around 5 mins (approximate)
Main drive	4 motors + ballraced steel main shafts

KIT CONTENTS

Twister SkyLift helicopter	1
Twister 4-channel FM transmitter (Tx)	1
Twister 11.1V lithium polymer battery pack	1
Twister Lithium 12V DC/DC balancer charger	1
Twister 240V mains power supply	1
Twister SkyLift instruction manual	1
Twister SkyLift Instructional Flight Training DVD	1
FREE main blades (upper & lower)	1 set
Flight Simulator USB cable set & adaptor (PC use)	1
AA pence transmitter batteries	8



IMPORTANT!
Radio controlled model
NOT A TOY!

This high performance model must be assembled according to the instructions. May cause serious injury to persons or property if not used responsibly or if operated without due caution.
Unsuitable for children under 14 years old.

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J Perkins Distribution Ltd declares that this remote controlled model helicopter is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

A copy of the declaration of conformity can be obtained from J Perkins Distribution Ltd, Ashford rd, Lenham, Kent. wME17 2DL

VITAL SAFETY INFO

Please read all instructions carefully before using this model. If any information in this manual is unclear, please contact your supplier for help. Please note especially the potential dangers associated with the rotating parts in this model:

DANGER—Wear protective eyewear when using model helicopters!

DANGER—Do not wear loose clothing or ties!

DANGER—Keep well clear of rotating blades!

DANGER—Never fly near children or animals!

ABOUT THE FLYING AREA REQUIRED

The Twister SkyLift is designed primarily for indoor use—or outdoors in calm conditions. A flat surface clear of all obstacles with an area of around 400 square feet is the minimum recommended requirement. However, you should fly only where it is safe to do so.

ABOUT TRAINING, CRASHES & SPARE PARTS

The Twister SkyLift has been designed to be strong and very easy to repair, however, the helicopter is not invulnerable and most people will accidentally break parts during their flying career. This is quite normal. All parts are available as spares from your supplier. Study the exploded view of the helicopter carefully to understand the relationship between parts and how to replace them if necessary. Crash damage is not covered by warranty.

GUARANTEE/WARRANTY

J. Perkins Distribution Ltd guarantee this product to be free of manufacturing and assembly defects for a period of one year from time of purchase. This does not affect your statutory rights. This warranty is not valid for any damage or subsequent damage arising as a result of a crash, misuse, modification or for damage or consequential damage arising as a result of failure to observe the procedures outlined in this manual. Operation of this model is carried out entirely at the risk of the operator. Please note that, whilst every effort is made to ensure the accuracy of instructions and material included with this product, mistakes can occur and neither J. Perkins Distribution Ltd nor its distributors will be held liable for any loss or damage arising from the use of this model or for any loss or damage arising from omissions or inaccuracies in the associated instructions or materials included with this product.

We reserve the right to modify the design of this product, contents and manuals without prior notification.

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INTRODUCTION

The SkyLift is the worlds first ready-to-fly (RTF) tandem rotor semi-scale helicopter giving a unique flight experience for newcomer and experienced pilot alike. Up until now tandem rotor R/C helicopters were considered difficult to fly and expensive—they were therefore flown by experts only.

Amazingly, the Twister SkyLift is EASIER to fly in hovering mode than normal helicopters!!

Here are five reasons why:

- 1/ The absence of a tail rotor means there is no fuselage swing on take-off, hence no need for the pilot to compensate with yaw control.
- 2/ Similarly, climb-outs are smooth and straight for the same reason—and likewise descents too!
- 3/ Landings are easier and straighter too!
- 4/ In addition, because there are TWO pairs of coaxial rotors you get double the stability that you would from a single coaxial rotor helicopter!
- 5/ The long fuselage and widely spaced undercarriage makes for ultra-stable ground-handling.

It almost hovers by itself!

The tandem coaxial rotor system and ingenious design of this helicopter make RC helicopter flight accessible and practical for the majority of people wanting to fly!

The Twister SkyLift demonstrates remarkable hovering stability and will help guide pilots into successful flight in the shortest possible time.

Test-flown, Flight Guaranteed and Ready to Fly!

The Twister SkyLift is ready to fly and is designed for use indoors and outdoors (in still/calm conditions) in an adequate and safe space. The helicopter is designed by expert engineers and every model is assembled AND test-flown at the factory. It is strong and designed with numerous innovative safety and damage prevention features. The Twister SkyLift uses the highest quality drive, power and control systems.

This really is one of the most fun-packed, unique models we have ever flown and we hope you will enjoy flying it as much as we have!

State-of-the-art electronics

6 channel receiver, piezo gyro, electronic mixers and speed controllers PLUS a computer fail-safe, an LED system check, and a motor safe-start facility are amongst the many sophisticated control features built into the on-board systems.

Damage prevention and safe-start systems

The fail-safe cuts power to the main motor in the event of transmitter failure while the safe-start only allows starting when the throttle stick and throttle

trim are low—so there is no danger of connecting the flight battery and thereby inadvertently powering up the main rotors.

Integral LBW (Low Battery Warning) beacon helps prevent damage to your helicopter & lipo battery by flashing when it's time to land & recharge!

Revolutionary MOPS (Motor Overload Protection System)

helps prevent damage to your motors & electronics by killing the motors automatically on blade-stalling tipovers—then automatically re-energising the system some seconds later!

Professional transmitter included

The transmitter has been designed for precision helicopter flying and features high quality adjustable height stick units, convertible between Mode II (throttle left) and Mode I (throttle right). The transmitter incorporates full 4-function control via two dual axis control sticks, socket for the (included) Flight Simulator cable set, reversing switches (European model), moulded ergonomic rear grips, carry handle, neckstrap hang point and a charging socket for charging (optional) rechargeable transmitter batteries.

Flight Simulator USB cable set included

Practice helicopter flying using the included transmitter connected to your Windows PC before flying for real!

Spares

All spare parts are available for the Twister SkyLift and can be purchased through model and hobby outlets. Some FREE spares are included which will help you through your learning phase.

NEW TO R/C HELIS?

The model is not a toy and requires careful preparation before flight. If you are new to RC helicopters, please do not expect to be able to open the box and immediately 'fly around'. RC helicopters are fun to fly but require a little time and training in order to be flown successfully.

Flight Training Guide and DVD included!

In the DVD and manual we have included sections on Basic Helicopter Flight Theory as well as a Flight Training Guide—written and produced by experienced RC model helicopter pilots. Virtually everyone should be able to fly this model using what is supplied in the box!

We hope you enjoy flying the worlds
FIRST-EVER RTF TANDEM ROTOR R/C helicopter!



GENERAL SAFETY CONCERNING HELICOPTERS

Please be aware that rotating blades can inflict painful and possibly serious injuries to people, animals or objects. Always maintain a safe distance clear of the rotor blades. We recommend people use protective eyewear when operating this model and that you read the manual carefully before operating your Twister SkyLift.

Radio controlled models themselves can reach high speeds and cover significant distances rapidly if control is lost. This model is capable of speeds of around 10mph (17kph) or greater. The model must therefore be used responsibly and with great care.

The model uses crystal-controlled 35mHz FM RC equipment. To avoid interference, always check frequencies with other pilots in the area before switching on.

In the UK, we recommend you observe the model flying safety code of the British Model Flying Association which can be found at the the following address: <http://www.bmfa.org>

WELCOME

KIT CONTENTS

- ▼ 1. Carefully remove the model and other items from the packaging and check all items are included. Please note the helicopter is supplied with the flybars and blades removed in order to minimise packaging material required and to reduce carton volume.
- ▼ 32. Insert the 8AA alkaline batteries into the transmitter battery compartment being careful to observe battery polarity.

Although the Twister SkyLift is strong, all model helicopters require careful handling and a delicate touch. In particular, take great care with small screws/bolts when fitting the blades and with the electrical connections to and from the on-board electronics.

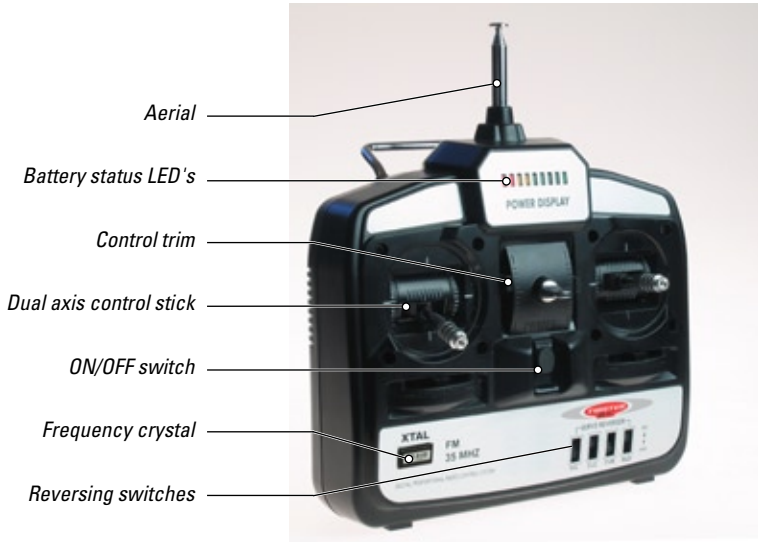
SAFETY NOTE!

RC flight is achieved through low power RF (radio frequency) transmissions. Do not shorten the receiver aerial or operate in the vicinity of any RF interference.



TRANSMITTER PART NAMES

The battery compartment is at the rear of the transmitter.



REVERSING SWITCHES

They are factory-set and should NOT be switched for flying your Twister SkyLift.

They may be useful if you use other models or fly the many models available within R/C flight simulators.

TRANSMITTER MODE CONVERSION

The transmitter can be converted from throttle left to throttle right and vice versa (i.e. between mode 1 and mode 2). Please contact your supplier for details.

GAS TURBINE DETAIL

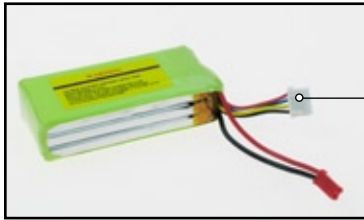
Moulded gas turbines are included and can be fitted if desired. Attach with the supplied double sided tape.





BATTERY & CHARGER

LITHIUM POLYMER FLIGHT BATTERY



Charging lead only

The Lithium polymer (Li-po) flight battery is a high power battery designed to give a flight time of up to 6 minutes per charge. It is supplied in a partially charged state. As well as a red JST polarised power lead the battery is also fitted with a white 3-pin polarised connector. This is the charge lead.

When you have finished flying for the day, recharge the battery and leave it in a partially or fully charged state.

Never leave your battery in a discharged state as this may damage the battery and shorten it's life.

The battery must be recharged when the LBW beacon on the top of the helicopter starts to flash blue, or if you notice the helicopter is losing power. At this point, land and recharge the battery.

Do not be tempted to run the battery past this stage as you will be over-discharging and the battery may be damaged.

WARNING!

Use only the supplied Twister charger to charge this battery.

WARNING!

Over-discharging will shorten the life of the battery or damage it. Stop flying immediately when the LBW (Low Battery Warning) beacon starts flashing. Then recharge the battery.

WARNING!

Do not short circuit—battery may explode!

PLEASE READ THE SAFETY PROCEDURES FOR HANDLING LI-POLY BATTERIES ON PAGE 23 BEFORE PROCEEDING FURTHER.

CHARGING THE FLIGHT BATTERY



The charger is designed to automatically charge the Li-Po battery in about 1 hour from a discharged state. The 12V DC automatic charger is powered by the 240 Volt power supply illustrated above. Alternatively, you can use a 12 volt sealed modelling battery to power the DC automatic charger.



- ▼ 1. Connect the charger to your power source. The 'POWER' LED will flash red.



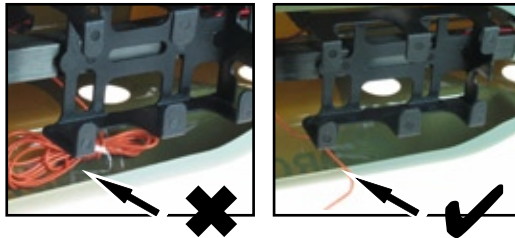
- ▼ 2. Plug the 3-pin connector on your Li-po battery into the socket in the right side of the charger.

The green LED will light and the red LED will glow solid red.

- ▼33. When the battery is fully charged the green LED goes out. Disconnect the battery from the charger.

- ▼ 4. Disconnect the power source from the charger. Your Li-po battery is ready for use.

AERIAL & FLIGHT BATTERY



- ▼ 1. Unwrap the orange receiver aerial taped inside the fuselage and allow to dangle freely.



- ▼ 2. Slide the charged battery pack into the lipo cradle as indicated.
Do not connect the battery yet!



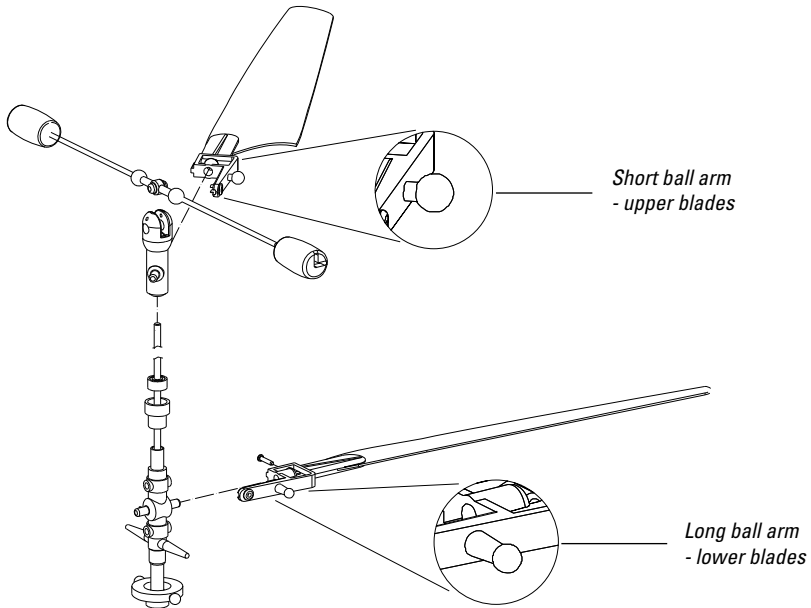
ROTOR BLADE & FLYBAR ATTACHMENT

The upper and lower main blades have been removed for shipping and must be refitted to the helicopter according to the following instructions.

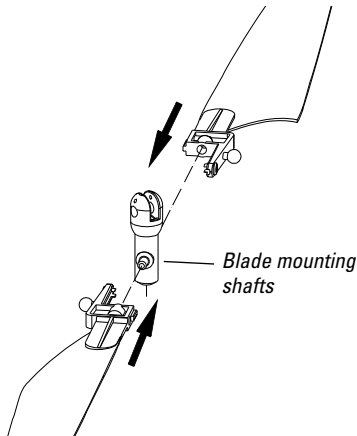
N.B. a complete set of spare blades is included too.

Although the blades at first glance may look identical, they are not!

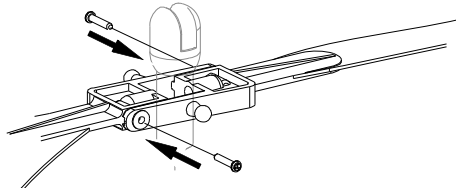
Upper blades have a shorter ball arm compared to lower main blades. See below.



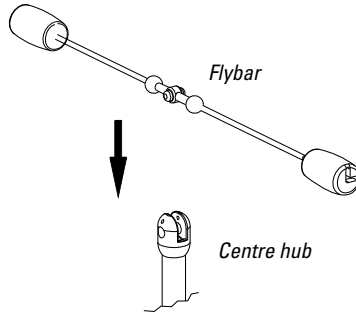
- ▼ 11. Slide the upper main blades onto the upper blade mounting shafts



- ▼ 12. Bolt the blades into position using the 2 phillips head bolts supplied.
Do not overtighten.



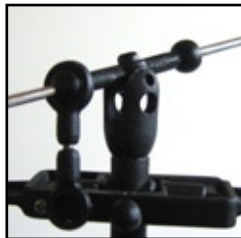
- ▼ 13. Repeat the previous two steps to attach the remaining 6 blades to the helicopter ensuring the correct placement of upper and lower blade types.
- ▼ 14. The flybars are snapped into position into the holes in the upper centre hub and do not require any screws.



Tip: Tilt the flybar at an angle when fitting. See below:



1. Tilt flybar



2. Press into top of hub



3. Snap into holes

- ▼ 15. Snap the plastic ball link onto the ball arm:



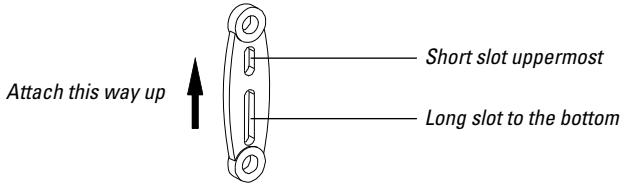
Snap link into place over ball

- ▼ 16. Fit the other flybar in the same way.

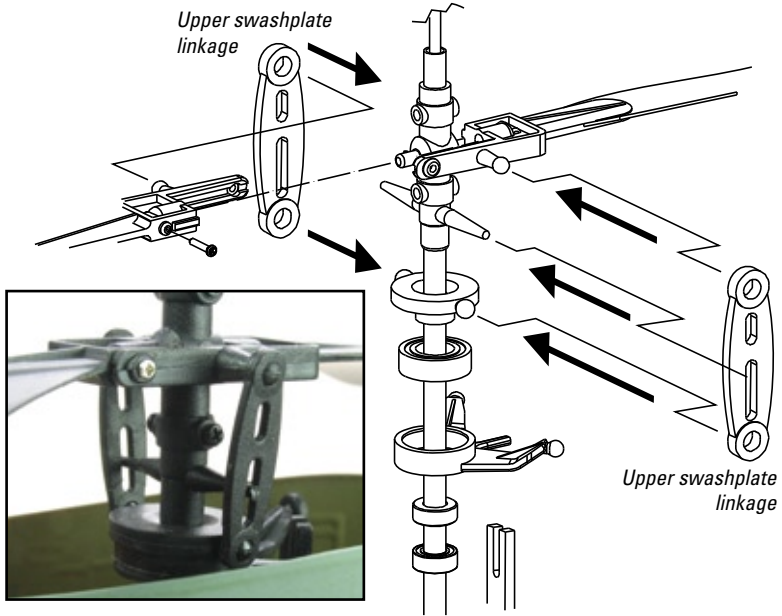


UPPER SWASHPLATE LINKAGES

The upper swashplate linkages can be found in the main rotor blade bags.
Note they are handed and must be fitted the correct way up. See below.



- ▼ 11. Attach two links to the helicopter as per the diagram below.
Do the same for the other rotor assembly.



- ▼ 1 Your Twister SkyLift rotor assembly should now look like this:



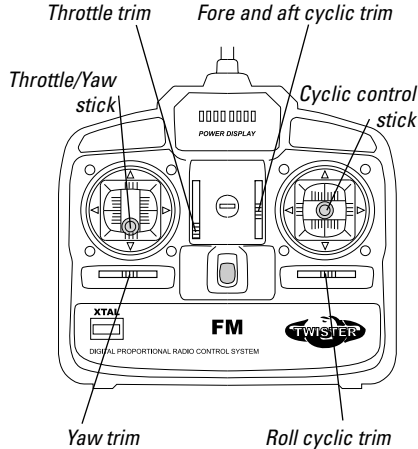
TRANSMITTER - THROTTLE LEFT (MODE 2)

A hovering helicopter is controlled about 4 axes; yaw, pitch, roll and height. Your transmitter has 2 dual-axis precision stick units with two controls on each stick.

In a throttle left (mode 2) transmitter

- ▼ The left stick controls height (climb or descent) and tail rotor controls yaw (left or right).
- ▼ The right stick operates the cyclic steering controls which are used to pitch the helicopter nose up/nose down—move forwards or backwards and to roll the helicopter left or right—crab to left or to right.

See page 22 for a complete description of R/C model helicopter controls.



- ▼ 11. Move the throttle (left stick) and throttle trim of your transmitter to the lowest (low throttle) position as shown above.
- ▼ 22. Centre the trim levers of the 3 other transmitter functions.
- ▼ 33. Extend the transmitter aerial fully.
- ▼ 44. Switch on the transmitter.



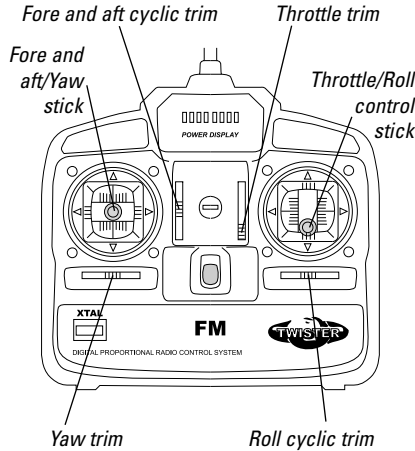
TRANSMITTER - THROTTLE RIGHT (MODE 1)

A hovering helicopter is controlled about 4 axes; yaw, pitch, roll and height. Your transmitter has 2 dual-axis precision stick units with two controls on each stick.

In a throttle right (mode 1) transmitter

- ▼ The right stick controls height (climb or descent) and cyclic aileron control to roll the helicopter left or right.
- ▼ The left stick operates the tail rotor controls yaw (left or right) and cyclic elevators controls which are used to pitch the helicopter nose up/nose down.

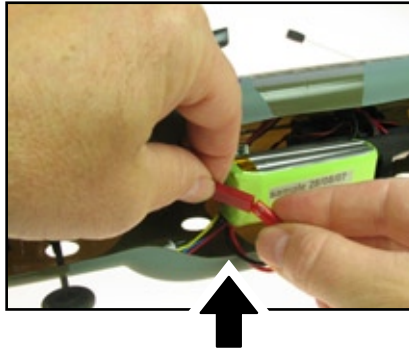
See page 22 for a complete description of R/C model helicopter controls.



- ▼ 11. Move the throttle (right stick) and throttle trim of your transmitter to the lowest (low throttle) position as shown above.
- ▼ 22. Centre the trim levers of the 3 other transmitter functions.
- ▼ 33. Extend the transmitter aerial fully.
- ▼ 44. Switch on the transmitter.

POWER CHECKS AND CONNECTING UP

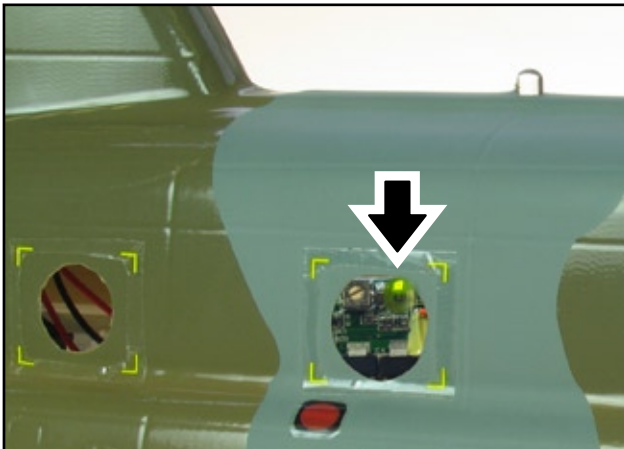
CONNECTING THE LI-PO BATTERY



- ▼ 11. Plug the battery connector into the matching battery lead emerging from the side of the canopy.

WARNING!

Keep hands, clothing, eyes, animals and children well clear when connecting power to this model or when flying it!



- ▼ 22. After the on-board 3-in-1 unit has completed satisfactory systems checks, the on-board LED will glow green continuously. You can view this through one of the observation hatches.

*Do not move the helicopter during the checking and calibration process.
Do not operate the throttle yet.*

WARNING!

Always extend the transmitter aerial fully.

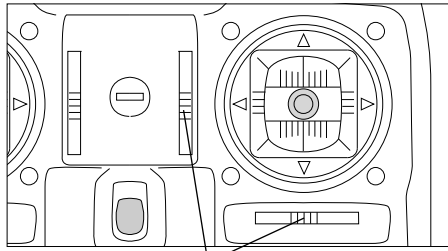
Check the receiver aerial emerging from the 3-in-1 board is extended (i.e. it must not lie coiled or wrapped inside the body of the helicopter).



SWASHPLATE LEVEL CHECK (MODE 2 TRANSMITTER)

The next stage requires you check control servo operation. Proceed as follows:

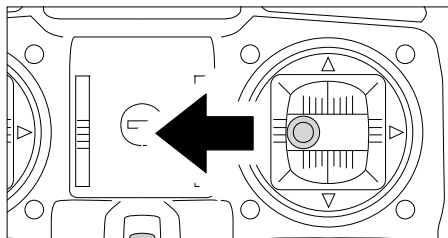
Swashplate



**Adjust cyclic trims to level swashplate
(Mode 2 transmitter shown)**

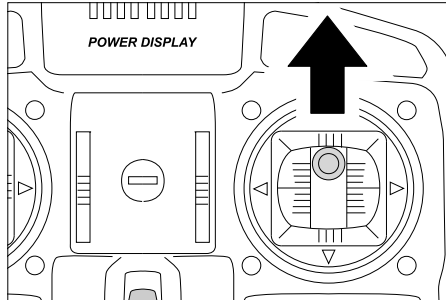
- ▼ The helicopter swashplates should be horizontal when viewed from the front and from the side of the helicopter. If it is not, adjust the position by operating the cyclic trims.

SWASHPLATE ROLL CHECK (MODE 2 TRANSMITTER)



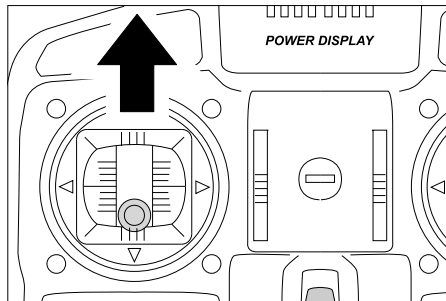
- ▼ Roll cyclic - Move the transmitter roll (aileron) stick to the left. Check swashplate moves by a small amount.

SWASHPLATE ELEVATOR CHECK (MODE 2 TRANSMITTER)



- ▼ Fore and aft cyclic - Move the fore and aft (elevator) stick forward. Check swashplate moves by a small amount.

THROTTLE CHECK (MODE 2 TRANSMITTER)



- ▼ Throttle - Slowly push the throttle stick forward by a small amount until the main rotors start to rotate. Then immediately throttle back.

YAW CHECK

- ▼ Yaw control functionality can only be checked prior to lift-off as the helicopter becomes light on its wheels.



RANGE & POWER CHECK

It is important to check the transmitter will operate the model satisfactorily at maximum range.

- In order to do this place your model on the ground and walk away from the model whilst operating the swashplate controls. Ensure the orange receiver aerial is uncoiled and left to dangle free. Check that the servos in the helicopter operate without interference up to a distance of 50 metres with transmitter aerial fully extended.
- Check that the transmitter Battery Status LED's are showing at least one lit green LED. Do not fly if no green LED's are lit.

Your Twister SkyLift is ready for flight, but...

WARNING!

...If you are not an experienced R/C model helicopter pilot you should read the ENTIRE manual before flying.

WARNING!

Do not fly at 50 metres distance or greater. At distances of greater than 50 metres, it will become virtually impossible to see your Twister SkyLift well enough to control it accurately.

We strongly recommend you fly no further away than 15 metres.

WARNING!

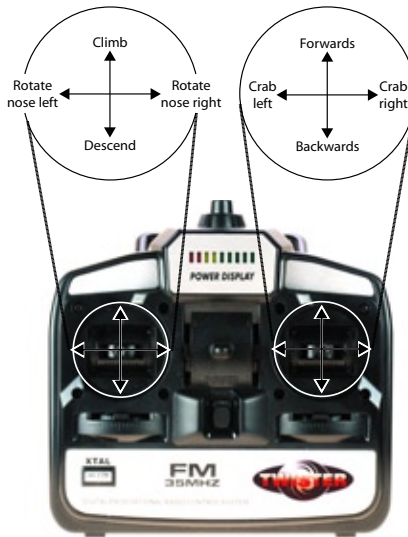
After finishing flying, always disconnect the battery from the helicopter FIRST. Then switch off the transmitter. Do not switch off the transmitter first and disconnect battery second.

WARNING!

You must take care and ensure the flying area is large enough and contains no obstacles (such as children, animals or furniture), which could be hit while you are flying your Twister SkyLift.

FLIGHT CONTROLS MODE 2

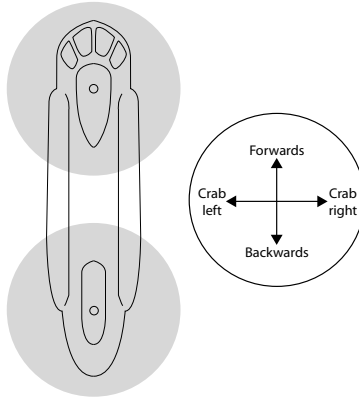
FLIGHT CONTROLS LAYOUT



- Each dual axis stick unit of your transmitter controls 2 helicopter functions (complete with trimmers on each function) giving you control about all 4 axes of flight). See above.

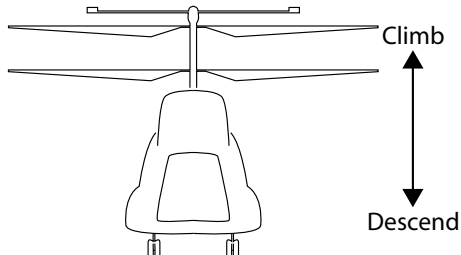
RIGHT STICK UNIT FUNCTIONS

- The right stick operates the 'cyclic' steering controls and moves the helicopter forwards/backwards and to the left/right in the horizontal plane. See below:

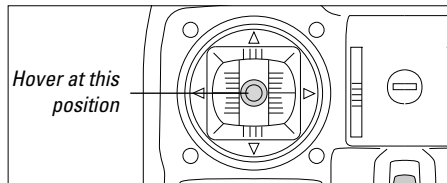


LEFT STICK UNIT FUNCTIONS

- The left stick operates throttle (main rotor speed) and yaw control. Throttle is increased to climb the helicopter and reduced to descend:

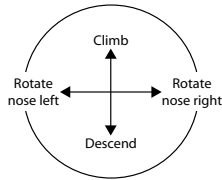
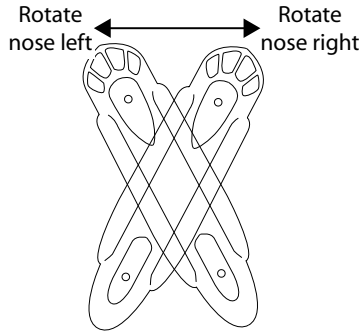


- The model hovers at approximately half power (at the middle stick position):



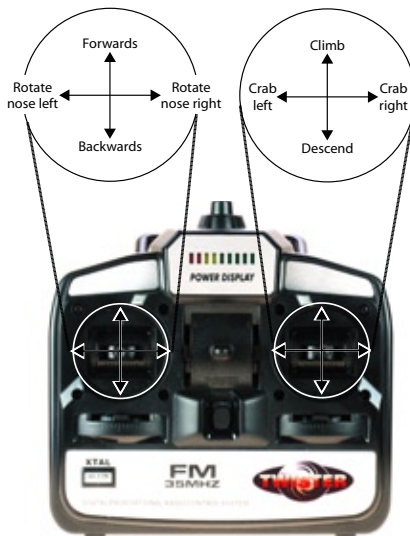


- Moving the stick to the left or right will rotate the nose to left or right. This is called 'yaw control'. See below:



FLIGHT CONTROLS MODE 1

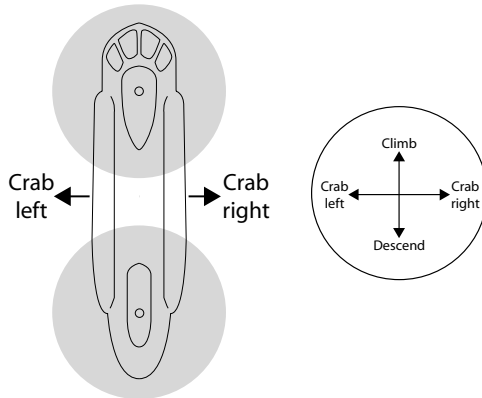
FLIGHT CONTROLS LAYOUT



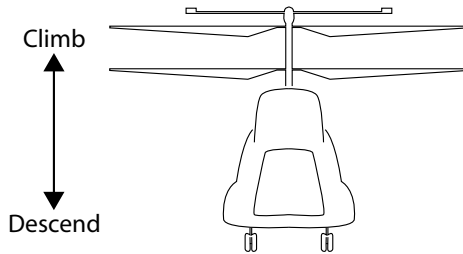
- Each dual axis stick unit of your transmitter controls 2 helicopter functions (complete with trimmers on each function) giving you control about all 4 axes of flight).

RIGHT STICK UNIT FUNCTIONS

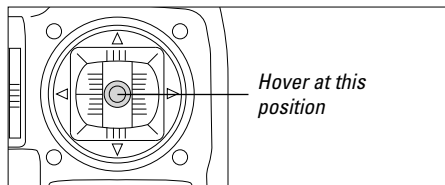
- The right stick operates the throttle (main rotor speed) and the 'cyclic' steering which moves the helicopter to the left/right in the horizontal plane. See below:



- The right stick also operates the throttle (main rotor speed). Throttle is increased to climb the helicopter and reduced to descend:



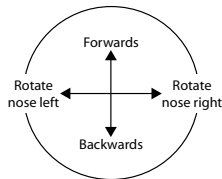
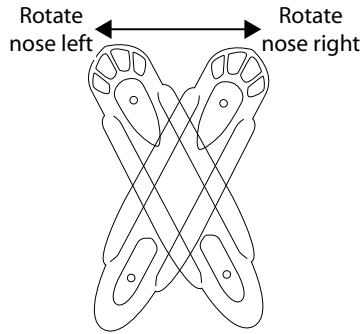
- The model hovers at approximately half power (at the middle stick position):



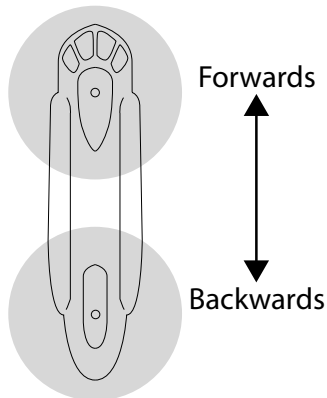


LEFT STICK UNIT FUNCTIONS

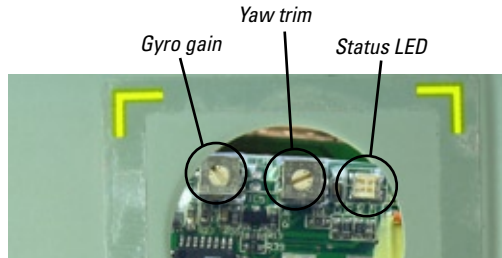
- ▼ The left stick operates both yaw control and the forwards/backwards 'cyclic' steering controls.
- ▼ Moving the stick to the left or right will rotate the nose to left or right. This is called 'yaw control'. See below:



- ▼ Moving the stick forwards or backwards will cause the helicopter to move forwards or backwards. See below:



FINE TUNING OF YAW CONTROL



The 2 trimmers on the front of the 3-in-1 unit are factory adjusted and usually require no adjustment. The status LED is next to the trimmers. The trimmers perform these functions:

- Gyro gain. The left trimmer (GAIN) adjusts the amount of yaw stabilisation.
- Yaw trimmer. The trimmer adjusts tail trim (yaw centre).
NB if you adjust this trimmer you must restart the helicopter in order to observe an effect on yaw trim.

Adjustment of the yaw trimmer has no effect until the li-po battery is disconnected then reconnected and the system restarted in the usual manner.

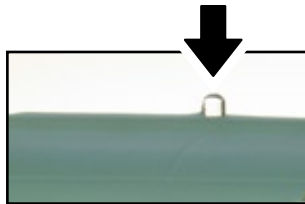
WARNING!

If your model tips over or crashes you should close the throttle immediately, disconnect the battery and carefully inspect the model for damage. Crash damage is not covered by warranty.

DAMAGE PREVENTION FEATURES

Unique features built into your Twister SkyLift are designed to prevent accidental damage to the power, drive and electronics systems.

LBW (LOW BATTERY WARNING) BEACON



The LED on the upper cabin of the helicopter will flash blue when the battery needs charging. You must land immediately and recharge the battery. If you ignore the LBW beacon you risk damaging your battery!

WARNING!

Damage caused to the battery is not covered by warranty.

MOPS (MOTOR OVERLOAD PROTECTION SYSTEM)

In the event of a crash or tip-over where the blades become stalled, MOPS cuts power to the drive motors and electronics in order to prevent damage to these components.

If you crash the helicopter badly causing a blade stall, MOPS will kill the power automatically. You should return the transmitter throttle stick to the low power position. The system will automatically re-arm some seconds later.



HOW DOES A HELICOPTER FLY?

A hovering helicopter is controlled about 4 axes; yaw, pitch, roll and height. Your transmitter has 2 dual-axis precision stick units with two controls on each stick.

In a throttle left (mode 2) transmitter

- The left stick controls height (climb or descent) and tail rotor controls yaw (left or right).
- The right stick operates the cyclic steering controls which are used to pitch the helicopter nose up/nose down and to roll the helicopter left or right.

In a throttle right (mode 1) transmitter

- The right stick controls height (climb or descent) and cyclic aileron control to roll the helicopter left or right.
- The left stick operates the tail rotor controls yaw (left or right) and cyclic elevators controls which are used to pitch the helicopter nose up/nose down.

The revolutionary contra-rotating system used in the Twister SkyLift transforms helicopter flight by making control so easy that the helicopter almost flies itself!

Transmitter stick movements

Your Twister SkyLift requires relatively firm control inputs due to the large degree of inherent stability designed-in. However, do not move the sticks to extreme positions! A sensitive touch is required on the sticks. The sticks should be allowed to return to neutral almost immediately after a control input is made—until you are familiar with the helicopter's response. If you watch an experienced pilot hovering his helicopter, you will see that his transmitter sticks move by small amounts only. This is the goal you will be working towards in this guide.

Height control

A helicopter's rotor blades generate lift, in the same way that a propeller generates thrust. The lift generated by the main rotor blades increases as rotor speed rises causing the helicopter to climb. Conversely as the main rotor speed is reduced, the helicopter descends.

Height is managed using the throttle stick.

Push the throttle stick forward (towards the top of your transmitter) to increase throttle and climb, pull back to descend. Your helicopter hovers at around the mid-stick/halfway position.

Yaw control

Yaw control is stabilised by the on-board electronic systems. When a helicopter is in the hover it can be yawed left or right. Push the rudder stick left to swing (yaw) the nose of the helicopter to the left and push to the right to yaw the nose right.

Your Twister SkyLift helicopter is fitted with electronic stabilising systems making for much easier flight. Be aware that the application of yaw and cyclic controls may cause the helicopter's height to vary.

Steering control - fore and aft cyclic

When hovering, a gentle forward push on the cyclic control stick will tilt the rotor discs forward causing the helicopter to move off in that direction. By releasing the sticks the helicopter should decelerate.

If it does not, pull the stick back gently to stop it. If you pull the stick back further, you will start flying backwards.

Steering control - roll cyclic

When hovering, a brief right control stick movement will roll the rotor discs to the right and the helicopter will start moving/crabbing to the right. By releasing the sticks the helicopter should decelerate. If it does not, apply left cyclic briefly. By briefly moving the stick to the left any right drift or movement will be arrested or reduced.

Mastering the hover

Both experienced model and full-size helicopter pilots in the hover will gently 'nudge' the cyclic controls automatically in order to keep their helicopter in one spot and prevent it from moving away from that spot. A large part of the initial learning phase in helicopter flight is about mastering the cyclic controls and learning to hover. Control commands will become 'instinctive' when you have 'mastered' the hover.

By using a PC, the flight Simulator cable supplied and downloadable free Simulator software you will be able to practice this and graduate to the real thing at the moment when you feel comfortable with your level of flying ability.



FLIGHT TRAINING GUIDE

The flying area

The flying area should be indoors in a large room, hall or office. Make sure walls, furniture and obstacles are at a distance of at least 10-15 feet (3-4 metres).

You should have all doors and windows closed as a breeze can affect your Twister SkyLift.

WARNING!

You should be aware that the main rotor blades spin at high rpm and are capable of inflicting serious damage to objects, people and animals.

You must take care when you are flying and make sure there are no children or animals in the room or flying area.

In addition, make sure the flying area is large enough and contains no obstacles (such as furniture) which could be hit while you are learning to fly your Twister SkyLift.

Positioning your Twister SkyLift

First, double check that all the controls are working and operating correctly.

Place the model in the middle of the room.

Position yourself at least 2 metres behind the helicopter and slightly off to one side so that you are able to see the nose of the helicopter.

***Useful tip** Please note when flying that you must always watch the nose of the helicopter. For example, if the nose of the helicopter yaws to the left the rear swings right, therefore you must apply right yaw to correct this by pushing the yaw stick to the right.*

Ground manoeuvres

Watch the nose and apply just enough throttle until the model becomes light on its wheels.

***Useful tip** All helicopters exhibit a degree of instability when approaching take-off as friction from the ground is reduced as the helicopter gets nearer to 'unsticking' from the surface.*

Observe whether or not the helicopter is tending to move forwards or backwards.

If it tilts forward, you will need to apply rear elevator (rear cyclic) trim to correct. And vice versa if the Twister SkyLift tends to tilt backwards towards you.

Observe the helicopter about the roll axis and adjust the trims in the same way—if it tends to roll to the left, apply a little right roll trim and vice versa.

Adjust the trims until the Twister SkyLift shows no detectable forward, backwards or sideways drift tendencies.

***Useful tip** When applying throttle, you must apply it gently and in small amounts.*

At this stage the Twister SkyLift MUST STAY ON THE GROUND!

Too much throttle will cause the helicopter to leave the ground and you may have difficulty in bringing it under control again.

WARNING!

Too much throttle applied too quickly will cause your helicopter to leap rapidly and uncontrollably into the air!

Never apply too much throttle too quickly.

Walking the helicopter

The helicopter should now be trimmed and you should be in a position to start learning to 'take your Twister SkyLift for a walk'.

These first flights should be made with the Twister SkyLift in contact with the ground at all times.

Apply just enough power to make the helicopter light on the wheels and add a few clicks of forward trim to tilt the rotor discs forwards.

Apply enough power so that the machine starts to move slowly forwards. Watch for any change of direction of the model and use the controls to correct.

At this point, you will be able to check yaw operation. Applying left yaw will tend to swing the nose to the left and right yaw will swing the nose right.

The aim now is to travel steadily and progressively across the floor.



Walk forwards following the helicopter across the floor whilst using the controls to maintain slow and accurate progress.

The 'walking technique' is the method often used to safely develop the automatic ability to apply the right control input when needed. You should practice this until you are starting to automatically input the control commands required to keep the helicopter moving gently forwards along the ground.

When you feel confident, proceed to the next step...

Taking the first 'hop'

By now you should be making the correct control inputs automatically and be able to make smooth progress across the surface of your floor. If you cannot, please keep practicing!

The first 'hop' is a natural 'next step' from walking your Twister SkyLift.

Whilst walking you apply a small amount of extra throttle to briefly raise the helicopter off the floor and into the air for a second. Then you should reduce throttle and settle back onto the floor.

With practice, you will find that you are able to make more and more of the correct control commands required to keep your Twister SkyLift upright and that the hops become longer and higher.

Always make sure you watch the nose of your helicopter—not the rear. The gyro will keep the model straight for you a lot of the time but you may have to use the yaw control to swing the nose of the helicopter straight as you make progress across the floor.

Keep practising and you will find that your flights will become longer.

Please be aware that a model helicopter in the hover—regardless of design—will never stay completely still! A helicopter will always require some level of input to stop drift or a tendency to turn or climb. This is not a sign of something faulty with the helicopter, but is in the nature of a hovering helicopter.

By now you should be able to manage hops at a height of between 10 and 30cm with duration of 5-10 seconds per hop. Flights will become longer and easier as your co-ordination and understanding of flight develop.

Hovering and manoeuvres

As your co-ordination and anticipation improves, you should be able to reduce forward speed when making 'hops', thereby bringing your helicopter into a hover.

Practice hovering until you feel confident with the basic handling of your helicopter.

Next, you should start experimenting at rotating (yawing) the helicopter slightly to the left or right using the (yaw) controls—but only proceed to this stage when you have mastered the hover!

From the hover, yaw the model a few degrees left and then back to straight ahead—always remembering to watch the nose. Practice yawing to left and to right until you feel confident.

Next, practice crabbing your Twister SkyLift to the right and left using cyclic controls:

From the hover, briefly 'nudge' a small amount of right roll. Your Twister SkyLift will start a drift to the right.

Put in a small amount of opposite roll to halt the drift, then a small amount of left roll to start a drift to the left. You may need to keep the tail straight using tail rotor whilst doing this. Always be ready to correct the drift by using opposite roll. If you get into trouble at any stage, reduce the throttle, land, change you trousers and try again.

Beyond the hover

As you become more proficient with your helicopter you will want a larger space so you can really start to fly around instead of hovering about all day.

If you do fly outside, please remember that any wind will affect the performance of your Twister SkyLift—sometimes markedly. Don't be too surprised if, while flying your model, it suddenly climbs or drops without you making any input. This can be caused by a small breeze, gust or a 'thermal' passing through.

A useful training aid is a computer flight simulator which can greatly enhance and speed up the learning process. A simulator is also great for teaching yourself "nose in" flying. This is when the nose of the helicopter is pointing at you and where some of the controls effectively become reversed—which can catch out both experienced and novice pilots alike!

GOOD LUCK AND HAPPY FLYING!

USB PC FLIGHT SIMULATOR CABLE

Your Twister SkyLift is supplied with a USB cable that connects via the socket on the rear of the transmitter to a Windows PC or notebook PC. This allows you to fly an R/C Flight Simulator using your Twister SkyLift transmitter!

Practice first—Fly later!



Screenshot from FMS Flight Simulator



USB cable supplied...



...connects your transmitter with your PC or laptop computer!

Using free R/C flight simulator software, downloadable from the Internet, you can run a realistic R/C helicopter simulation that will allow you to practice until you feel comfortable enough with the simulator to have a go with the real model.

The transmitter supplied can be used with a Windows PC to run a number of R/C model flight simulators. The advantage to the pilot is twofold: by practising using your own transmitter on a simulator you will get familiar with your very own set of controls when you fly your Twister SkyLift for real.

Secondly, a simulator is particularly good at introducing the basics of R/C flight for those unfamiliar with the four flying controls, the trims and their effects on a helicopter.

For advanced pilots wishing to practice 'nose-in' hovering where the controls are effectively reversed; a simulator is a great tool.

Download a FREE flight simulator software from the Internet:

We recommend the FMS free flight simulator available at URL:

http://n.ethz.ch/student/mmoeller/fms/index_e.html

There are hundreds of different models available for use with the FMS simulator. For example, you can download a tandem rotor helicopter for use with the FMS Simulator from this URL:

http://www.geocities.jp/vitamin3dx/image_fms/fms_ch-47_data.html



TROUBLESHOOTING

MAIN ROTOR DOES NOT TURN

- Check throttle stick and trim lever are in the fully down position before advancing the throttle stick.
- Check all electrical connections and that the receiver crystal is seated securely in the socket in the receiver unit.
- Check that both motor pinion gears are still engaged with the main drive gears.
- Check Li-po battery is charged.
- Check the transmitter battery LED display. If no green lights are showing, the batteries must be replaced.
- Check green light on 3-in-1 unit is glowing.

HELICOPTER DIFFICULT TO CONTROL ABOUT YAW AXIS

- Check main gear retaining set screws are secure.
- Increase Gyro Gain Trimmer (located on 3-in-1 unit).
- Check transmitter rudder trim.

HELICOPTER DIFFICULT TO KEEP IN ONE SPOT

- Check that no ball and socket linkages are binding.
- Check there is no friction /binding in pushrod/control arm/linkage areas—all must move freely with virtually no apparent friction.
- If your flying area is too small or contains many large objects/furniture stability will be affected as rotor downwash is reflected from objects in the vicinity back into the helicopters rotor wash area. N.B. A room that is small but clear of furniture may also cause stability problems as rotor downwash is reflected off the walls and back towards the helicopter.
- Helicopter 'wanders' and will not stay in one place. Although this is a rather subjective observation, this is often normal helicopter behaviour. All helicopters require a certain amount of control input in order to remain in one spot. If you have eliminated possible mechanical problems and location problems first then it's probably just you! A small amount of wandering is quite normal.

HELICOPTER ACCELERATES AWAY WHEN STICKS ARE NEUTRAL

- Check that swashplate is level. Adjust trimmers and/or adjust swashplate cyclic links length if necessary.

VIBRATION

- Check the flybar ball link is connected correctly
- Check the main rotor blade screws have been done up.
- Bent main shaft(s)—the tail boom and undercarriage will vibrate if the main shaft(s) is/are bent. Replace the main shaft(s) and gear unit if you suspect a bent main shaft.
- Flybar is bent—straighten or replace if badly bent.
- Main blades out of balance—check that blades are not bent or broken.

LITHIUM POLYMER BATTERY SAFETY

Before Charging Li-po batteries

- Before charging your battery check for any damage e.g. check if the battery has expanded or swollen in size or if the battery cells have been punctured.
If any of the above is true: DO NOT CHARGE THE BATTERY!

Charging Li-po's

- Only use a charger designed to charge Lithium polymer batteries. Never use a nicad or other charger as this is VERY DANGEROUS!
- Never charge a hot battery. Always allow battery to cool after flying and before recharging.
- Never attempt to charge at a rate faster than that recommended in the instructions. Check that the **battery** cell count matches the **charger** cell count switch (if fitted).
- Never charge unattended. Always stay with your battery whilst charging in case of overheating or fire.
- Charge on a safe surface or container (e.g. old unused microwave oven). Charge **only** on non-flammable surfaces, e.g. concrete floor preferably outdoors, or in a pyrex cooking dish with the battery placed on a bed of sand, or in a fireplace.
NEVER CHARGE INSIDE A CAR!
- Switch off charger if battery gets too hot. If the battery becomes hot to the touch during charging, disconnect and switch off immediately.
- Extinguish fires with sand. If something goes wrong and your battery catches fire, always have sand from a fire bucket at hand to douse the flames.
DO NOT USE WATER!

Using Li-po's

- Do not modify/change any part of the battery or lead. Do not remove it's heat shrink protective covering. Removal or modification may damage the battery and will invalidate any warranty claim.
- Do not place this battery near fires or any high temperature object or device.
- Do not charge batteries while you are driving and do not store batteries in any type of motor vehicle.
- Do not let the battery get wet or become submerged in any type of liquid.
- Do not carry loose batteries in your pocket or bag as they could short-circuit against other items.
- If you should get electrolyte from the cells on your skin, wash thoroughly with soap and water. If in your eyes, rinse thoroughly with water.
SEEK MEDICAL ASSISTANCE IMMEDIATELY!

PARTS LISTING

Part No.	Description
5510602	ALKALINE AA PENCCELLS (NOT SHOWN)
6600292	3-CELL SKYLIFT LI-POLY BATTERY
6600320	3-CELL LI-PO BALANCER CHARGER
6600330	240v (TO 12v DC) POWER SUPPLY 3 PIN (NOT SHOWN)
6600331	240v (TO 12v DC) POWER SUPPLY (2 PIN) (NOT SHOWN)
6600343	6CH RECEIVER
6600344	3-IN-1 ELECTRONICS UNIT
6600363	EnErG 6.0G SERVO GEAR SET (NOT SHOWN)
6600370	MOPS & CONNECTOR LEAD (NOT SHOWN)
6600373	LOW BATTERY WARNING BEACON 11.1V(LBW)
6600850	SCREWDRIVER/TIE WRAP/TAPE (NOT SHOWN)
6601520	MOTOR A (LOWER)/METAL PINION
6601530	MOTOR B (UPPER)/METAL PINION
6601550	INNER MAIN SHAFT BEARINGS
6601560	OUTER MAIN SHAFT BEARINGS
6601650	MAIN BLADES UPPER
6601660	MAIN BLADES LOWER
6601670	ROTOR HUB AND LINKS SET
6601690	FLYBAR AND WEIGHTS SET
6601765	MAIN SHAFT RETAINING COLLAR
6601790	SWASHPLATE
6601910	INNER MAIN SHAFT & GEAR
6601911	OUTER SHAFT & MAIN GEAR SET



Part No.	Description
6601912	REAR WHEEL SET
6601913	FRONT WHEEL SET
6601914	MAIN CHASSIS TUBE
6601915	LONG CARBON PUSHROD SET
6601916	SHORT CARBON PUSHROD SET
6601917	MAIN FRAME
6601918	BODY MOUNTING SET
6601919	FUSELAGE
6601920	TURBINE SET (FOR FUSELAGE) (NOT SHOWN)
6601921	SWASHPLATE LINK SET
6601922	BELLCRANK SET (4)
6601923	BOLT/NUT/WASHER SET (NOT SHOWN)
6601924	SERVO MOUNT
6601925	REAR MAIN FRAME MOUNT
6601926	LANDING GEAR MOUNTS
6601927	MAIN MOTOR WIRE HARNESS
6601928	LIPO BATTERY CRADLE
7712105	SUPER MICRO 6.0g SERVO (S6 EnErG)
7711120	35FM CRYSTAL PAIR (NOT SHOWN)
7711310	TX AERIAL ONLY (NOT SHOWN)
7711350	USB SIMULATOR CABLE
7711352	SIMULATOR ADAPTOR CABLE
7711996	TRANSMITTER 4-CH 35mhz FM (NOT SHOWN)

Additional Instructions - please read carefully

1/ See Page 7. Battery positioning

Your helicopter includes a narrower, lighter battery pack. Fit and secure the battery in position using the retaining band supplied. See illustration opposite:

2/ Factory setup

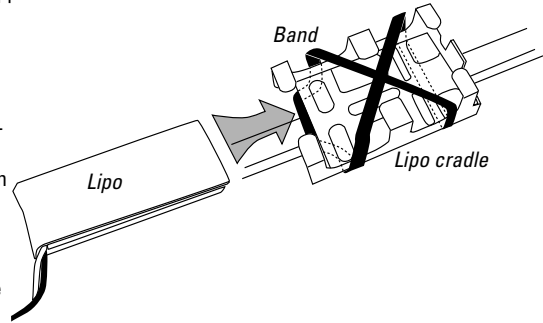
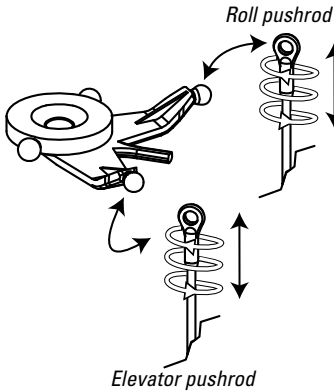
This model has been set up (and test flown) at the factory in BEGINNER/SCALE CONFIGURATION.

This means the helicopter will be very stable and easy to hover. It is designed to fly slowly forwards, backwards, left or right in a scale-like fashion.

DO NOT expect to be able to fly forwards or backwards very fast!

3/ Page 14. Extra trim adjustments may be required in the hover

The helicopter uses relatively long control pushrods that can change length slightly with temperature. This means you may need to adjust swashplate pushrod length in order to hover within the limits of your transmitters' trims.



If you need to do this, snap the appropriate links off the swashplate and adjust as necessary. See diagram opposite: NB. You must adjust BOTH swashplates if trimming is required.

4/ Page 16. Range and power checks

Important swashplate setup information

Prior to flying, check to ensure that both swashplates sit horizontally at exactly the same angle. Adjust swashplate pushrod length as described above to level both swashplates if necessary.

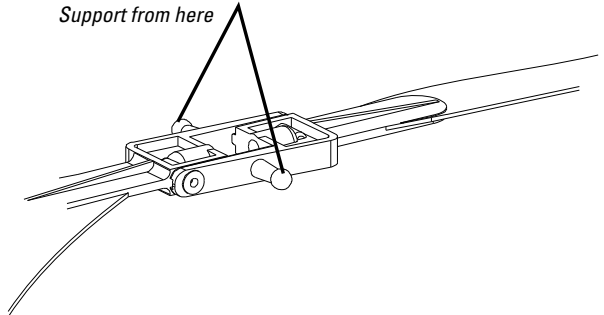
5/ Swashplate control throws - experienced pilot tips and safety

Experienced pilots may want to increase control throws by moving linkage positions in/out at the appropriate control horns/bell-cranks. If you try this, make sure BOTH swashplate systems are adjusted IDENTICALLY and make only small changes. Increased control throws can cause unexpected flight behaviour or even damage to the rotors/helicopter in some circumstances, therefore make changes to the factory setup AT YOUR OWN RISK!

6/ Blade and flybar balance - tuning tip

Blades and flybars are factory matched for good balance. If any vibration is present in the helicopter (e.g. main shafts may vibrate in flight), remove blades and flybars and check blade balance by supporting an assembled blade pair lightly between thumb and forefinger. Add a small amount of clear tape to the undersurface of the lighter blade. Support a flybar from its centre in the same way and add tape to the lighter end if necessary.

Support from here



J Perkins Distribution, Lenham, England



www.jperkinsdistribution.co.uk