

TWISTER BELL MEDEVAC

READY TO FLY 4 CHANNEL R/C HELICOPTER

Assembly & Flight Training guide

**TEST-FLOWN &
FLIGHT-GUARANTEED**

so you know it flies!



SPECIFICATIONS

Main rotor diameter	340mm
Fuselage length	365mm
R/C transmitter	35mHz FM 4 channel with 4 trims
Cyclic steering	hi-torque EnerG micro servos
On-board electronic control	Twister 4-in-1 unit
On-board power	7.4V 800mAh Li-polymer (with cell balancer)
Model weight (no battery)	179g (6.3oz)
Flying weight.....	222g (7.8oz)
Flight time per charge	10-15 minutes (approximate)
Main drive	twin motors + ballraced steel main shafts
Primary electronic stabilisation	on-board piezo yaw rate gyro

KIT CONTENTS

Twister Bell Medevac helicopter	1
*Twister 4-channel 35Mhz FM transmitter	1
Twister "4 in1" on-board electronics unit.....	1
EnErG micro servos	2
Twister transmitter and receiver crystals.....	1 set
Twister 7.4V lithium polymer battery pack.....	1
Twister Lithium polymer 12V DC/DC Charger	1
**Twister 240V mains power supply	1
Twister Bell Medevac instruction manual.....	1
Twister Bell Medevac DVD	1
Spare FREE set main blades (upper & lower)	1
AA pence transmitter batteries	8

*36MHz FM in Australasia

**UK/European version only



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.

TABLE OF CONTENTS

<i>Guarantee/warranty</i>	2
<i>Introduction</i>	3
<i>New to R/C helicopters?</i>	3
<i>General safety concerning helicopters</i>	4
<i>Welcome</i>	4
A. Kit contents	4
B. Helicopter part names	5
C. Transmitter part names	5
<i>Flight preparation</i>	6
A. Fitting the flybar	6
B. Lithium polymer flight battery.....	7
C. Charging the flight battery	7
D. Fitting the flight battery	8
E. Linkage checks	8
<i>Transmitter layout throttle left (mode 2)</i>	9
A. Stick and trim control summary	9
<i>Transmitter layout throttle right (mode 1)</i> 10	
A. Stick and trim control summary....	10
<i>Power checks and connecting up</i>	11
A. Connecting the Li-po battery	11
B. Swashplate level check(Mode 2 transmitter).....	12
C. Swashplate roll check(Mode 2 transmitter).....	12
D. Swashplate elevator check(Mode 2 transmitter).....	13
E. Throttle check(Mode 2 transmitter)13	
F. Yaw check.....	13
G. Range check	14
<i>Flight controls mode 2</i>	14
A. flight controls layout	14
B. Right stick unit functions.....	15
C. Left stick unit functions	15
<i>Flight controls mode 1</i>	16
A. flight controls layout	16
B. Right stick unit functions.....	17
C. Left stick unit functions	18
<i>Fine tuning of yaw control</i>	19
4 in 1 unit adjustors	19
<i>How does a helicopter fly?</i>	20
<i>Flight training guide</i>	21
The flying area	21
Positioning your Twister Medevac ...	21
Increase throttle gently.....	21
Walking the helicopter	21
Taking the first 'hop'	22
Hovering and manoeuvres	22
Beyond the hover	22
<i>Troubleshooting</i>	23
<i>Lithium polymer battery safety</i>	23
<i>Parts listing</i>	24
<i>Exploded view</i>	26



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 Medevac is designed primarily for indoor use—or outdoors in flat calm conditions. A hard, 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 Medevac has been designed to be strong and very easy to repair, however, the helicopter is not invulnerable and most people will tip their helicopter over or 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 and Model Engines (Aust.) Pty. Ltd. guarantee this product to be free of manufacturing or 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/Model Engines (Aust.) Pty. Ltd. nor it's 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.

© 2006 J Perkins Distribution Ltd, Lenham, Kent, UK ME17 2DL.

www.jperkinsdistribution.co.uk

Model Engines (Aust.) Pty. Ltd., Noble Park, Victoria 3174,

Australia. www.modelengines.com.au. All rights reserved. E&OE.

INTRODUCTION

Thank you for buying one of the most complete, most stable, high quality scale RC helicopters available today.

It almost hovers by itself!

The co-axial rotors and ingenious design of this helicopter make RC helicopter flight accessible and practical to virtually anyone interested in RC helicopters!

The Twister Medevac 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 Medevac is ready to fly and is designed for use indoors and outdoors (in calm conditions) in an adequate and safe space. The helicopter is designed by expert engineers and assembled at the factory. It is very strong and designed with numerous innovative safety features. The Twister Medevac uses the highest quality drive, power and control systems.

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

State-of-the-art electronics in one package

The '4-in-1' on-board electronics package includes 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.

Fail-safe and safe-start systems included

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.

Professional transmitter included

The transmitter has been designed for precision helicopter flying and features high quality 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, moulded ergonomic rear grips, carry handle, neckstrap hang point and a charging socket (for charging optional rechargeable transmitter batteries).

Spares

All spare parts are available for the Twister Medevac and can be purchased through model and hobby outlets.

NEW TO R/C HELICOPTERS?

Welcome to the thrilling challenge that is RC model helicopter flying!

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 some training in order to be flown successfully.

Helicopter flight techniques must be learnt

The model is not a toy and requires preparation before, during and after flight. It also requires a commitment to spend a bit of time learning the procedures required for it's successful operation.

To most people, this is an interesting and exciting challenge, however, we recognise this may not be what you expected from this product.

Therefore, if this is not what you expected, we advise you not to buy it.

Flight Training Guide and DVD included!

We have included a section on Basic Helicopter Flight Theory as well as a Flight Training Guide AND a Medevac Flight Training DVD—all written and produced with the aid of experienced RC model helicopter pilots.

We hope this material will help you successfully explore real RC helicopter flying.

Please note that we do not guarantee that by following the information included with this product you will be bound to achieve successful helicopter flight. Neither do we guarantee you will not break anything!!



GENERAL SAFETY CONCERNING HELICOPTERS

Please be aware that rotating blades can inflict painful and possibly serious injuries to people, animals or objects should the rotors strike someone or something. We recommend people use protective eyewear when operating this model.

Radio controlled models themselves can reach high speeds and cover significant distances rapidly if control is lost. This model is capable of speeds around 20mph (30kph).

The model must therefore be used responsibly and with great care generally.

The model uses crystal-controlled 35mHz (36mHz in Australasia) FM RC equipment. To avoid interference and possible crashes, always check frequencies with other pilots in the area before switching on.

Please 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

A. KIT CONTENTS

- ▼ 1. Carefully remove the model and other items from the packaging.
N.B. A mains power supply unit is included with the UK version ONLY.
- ▼ 2. Screw the transmitter aerial into its socket in the top of the transmitter.
- ▼ 3. Insert the 8AA alkaline batteries supplied into the transmitter battery compartment being careful to observe battery polarity.
- ▼ 4. Please note the receiver aerial is factory fitted and runs the entire length of the tail boom.
(see below).

Do not alter the position or length of the aerial!

Although the Twister Medevac is strong, all model helicopters require careful handling and a delicate touch. In particular, take great care with the electrical connections to and from the '4-in-1' control unit and also the main rotor associated parts.

SAFETY NOTE!

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



B. HELICOPTER PART NAMES



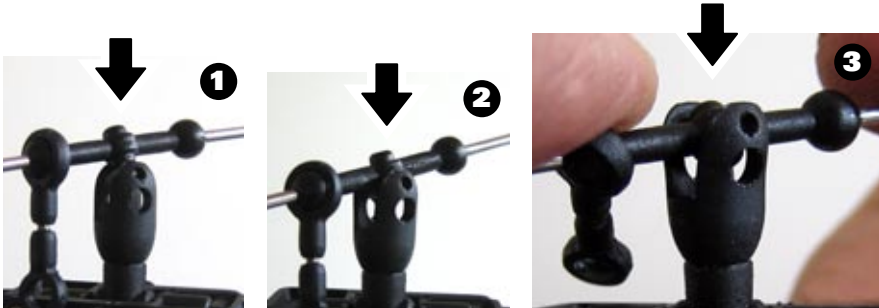
C. TRANSMITTER PART NAMES

Transmitter battery compartment is located on the reverse side of the transmitter.

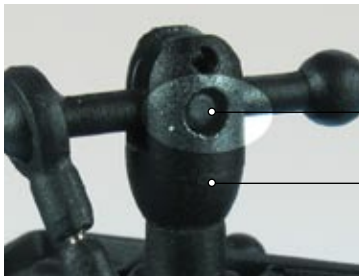


FLIGHT PREPARATION

A. FITTING THE FLYBAR



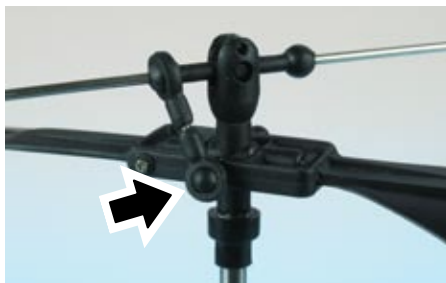
- ▼ 1. The flybar is supplied loose. Carefully snap fit the flybar unit into the mouldings at the top of the main shaft following the sequence outlined above. The moulded 'flybar locating lugs' must snap into the matching holes in the 'flybar hub'.



Flybar locating lug in matching hole

Flybar hub

- ▼ 2. The assembled flybar hub unit should look like the above.



- ▼ 3. Snap the plastic flybar link into position on a ball arm as shown above.

The flybar must be free to rock with no friction or sticking!

It should appear to sit 'loosely' in position—double check before proceeding!

B. 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 10-15 minutes per charge. It is supplied in a partially charged state.

As well as a red JST polarised lead (for connection later to the 4-in-1 board), the battery is also fitted with a white 3-pin polarised connector. This is the charge lead. Connect this white lead to the charger.

Always leave the battery in a partially charged state. Never leave it in a discharged state.

The battery should be recharged when you notice the helicopter no longer has enough power to maintain height. At this point, land and recharge the battery. Do not be tempted to run the battery past this stage (over-discharging) as damage may occur to the battery.

WARNING!

Use only the special Twister charger with this battery.

WARNING!

Over-discharging will shorten the life of the battery or destroy it.

WARNING!

Do not short circuit—battery may explode. See page 23.

PLEASE READ THE SAFETY PROCEDURES FOR HANDLING LI-POLY BATTERIES AT THE END OF THIS MANUAL ON PAGE 23 BEFORE PROCEEDING FURTHER.

C. 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 (supplied with UK version only—In Australia; the power supply is available separately part #ME12150).

Alternatively, you can use a 12 volt sealed modelling battery to power the DC automatic charger.

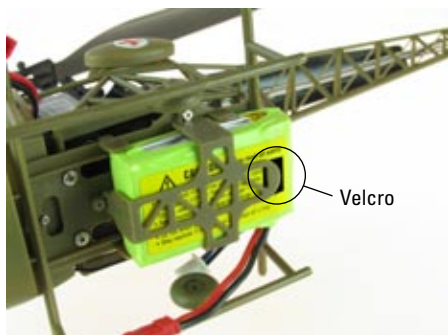


- ▼ 1. Connect the charger to your power source. The 'POWER' LED will flash red.



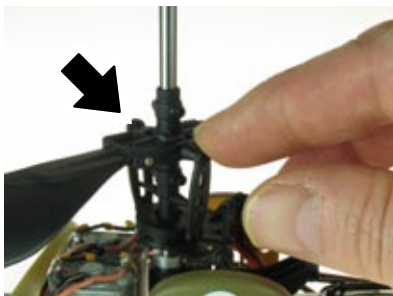
- ▼ 2. Plug the 3-pin connector on your Li-po battery into the socket in the right side of the charger.
The green LED will light and the red LED will glow solid red.
- ▼ 3. When the battery is fully charged the green LED goes out. Disconnect the battery from the charger.
- ▼ 4. Disconnect the 12V power source from the charger. Your Li-po battery is ready for use.

D. FITTING THE FLIGHT BATTERY



- ▼ 1. Slide the charged battery pack into the battery holder but do not connect the power lead yet!
Ensure the battery is slid all the way home and retained with a small piece of velcro fastening (attached to the battery and lower battery holder).

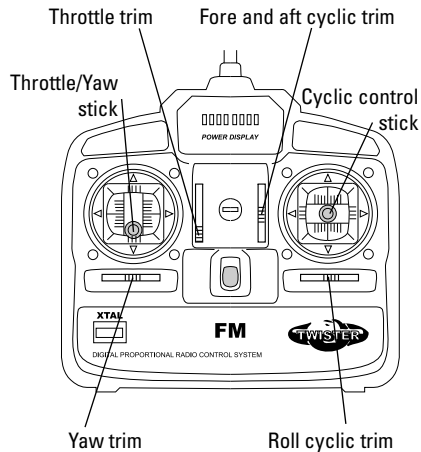
E. LINKAGE CHECKS



- ▼ 1. Check that all linkages and connectors are attached and that rotating parts are free to rotate smoothly.
- ▼ 2. Check that all linkages move freely with no binding or stiffness. Free off any linkages that show any sign of tightness or binding.

TRANSMITTER LAYOUT THROTTLE LEFT (MODE 2)

A. STICK AND TRIM CONTROL SUMMARY

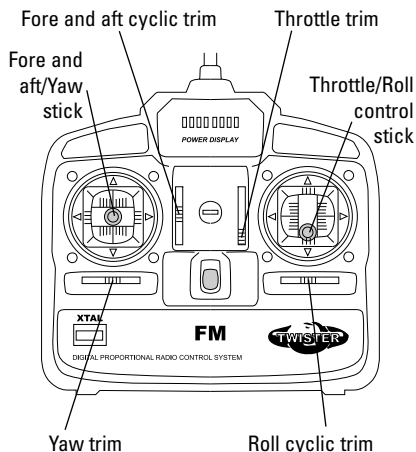


- ▼ 1. Move the throttle (left stick) and throttle trim of your transmitter to the lowest (low throttle) position as shown above.
- ▼ 2. Centre the trim levers of the 3 other transmitter functions.
- ▼ 3. Extend the transmitter aerial fully.
- ▼ 4. Switch on the transmitter.



TRANSMITTER LAYOUT THROTTLE RIGHT (MODE 1)

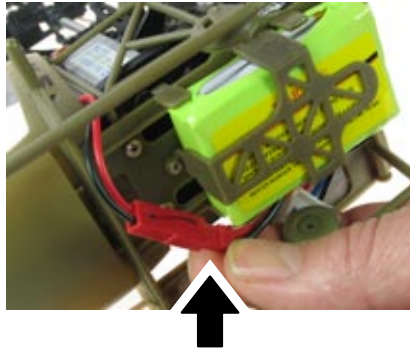
A. STICK AND TRIM CONTROL SUMMARY



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

POWER CHECKS AND CONNECTING UP

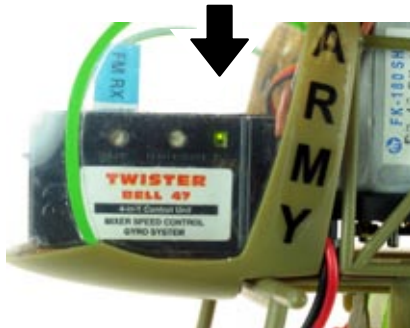
A. CONNECTING THE LI-PO BATTERY



- ▼ 1. 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!



- ▼ 2. After the on-board 4-in-1 unit has completed satisfactory systems checks, the on-board LED will glow green continuously.

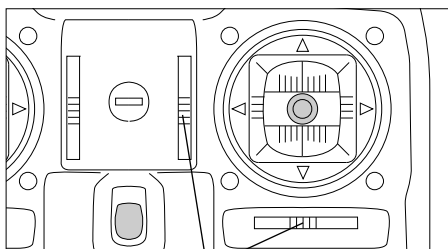
*Do not move the helicopter during the checking and calibration process.
Do not operate the throttle yet.*

WARNING!

Always extend the transmitter aerial fully.

B. SWASHPLATE LEVEL CHECK (MODE 2 TRANSMITTER)

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

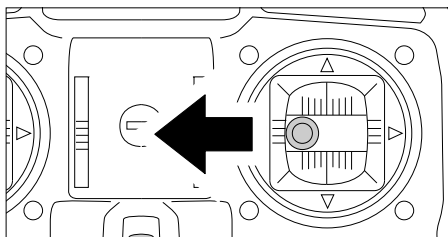


**Adjust cyclic trims to level swashplate
(Mode 2 transmitter shown)**

- ▼ The helicopter swashplate should be horizontal when viewed from the front and from the side of the helicopter. If it is not, adjust it's position by operating the cyclic trims. See pics above.

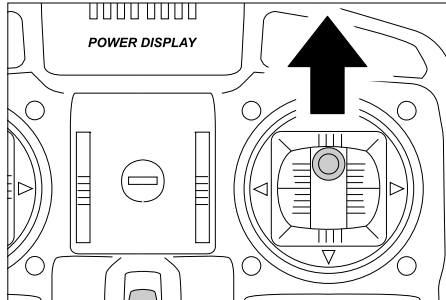
The ball joints snapped to the swashplate can be unsnapped and screwed/unsnapped if further adjustment is needed after the model has flown.

C. SWASHPLATE ROLL CHECK (MODE 2 TRANSMITTER)



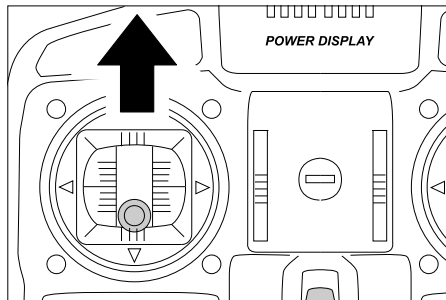
- ▼ Roll cyclic - Move the transmitter roll (aileron) stick to the left. The swashplate will tilt as indicated above.

D. SWASHPLATE ELEVATOR CHECK (MODE 2 TRANSMITTER)



- ▼ Fore and aft cyclic - Move the fore and aft (elevator) stick forward. The swashplate will tilt as indicated above.

E. THROTTLE CHECK (MODE 2 TRANSMITTER)



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

F. YAW CHECK

- ▼ Yaw - Tail control is achieved by altering the relative speed of the main rotors and can only be checked just before take-off as the helicopter becomes light on its skids.



G. RANGE 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.
Check that the servos in the helicopter operate without interference up to a distance of 50 metres with transmitter aerial fully extended.

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

WARNING!

...If you are not an experienced R/C model helicopter pilot you must 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 impossible to see your Twister Medevac.

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

WARNING!

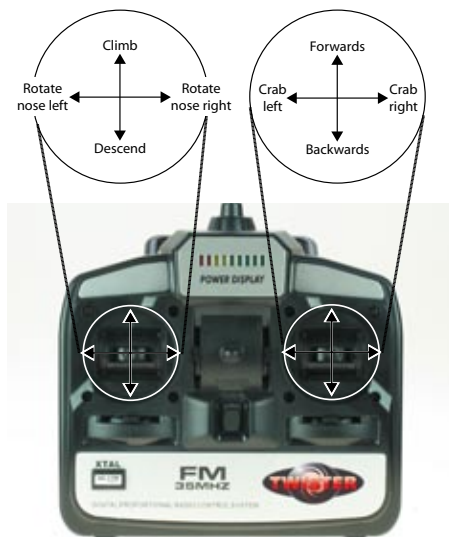
After finishing flying, always disconnect the battery from the helicopter FIRST. Then switch off the transmitter. Do not switch off the transmitter first and disconnect battery second.

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 Medevac.

FLIGHT CONTROLS MODE 2

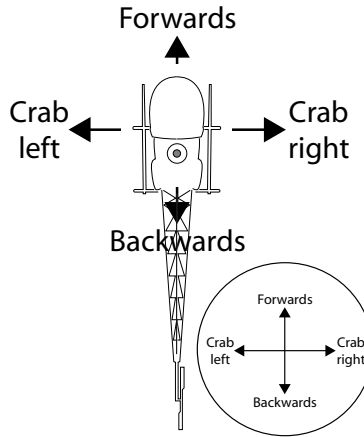
A. FLIGHT CONTROLS LAYOUT



- ▼ 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.

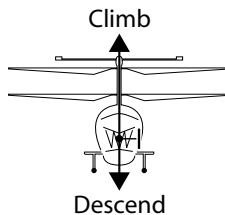
B. RIGHT STICK UNIT FUNCTIONS

- ▼ 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:

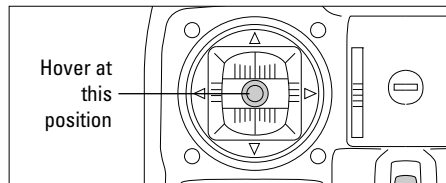


C. LEFT STICK UNIT FUNCTIONS

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

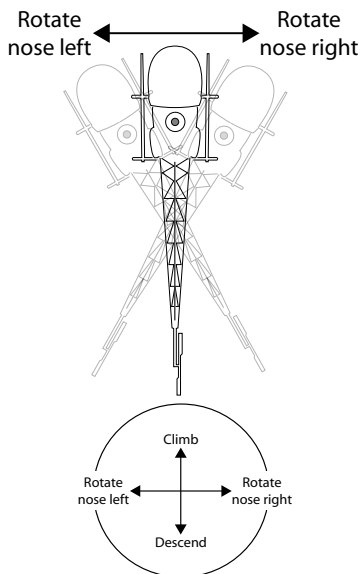


- ▼ The model hovers at approximately half power (at the middle stick position):



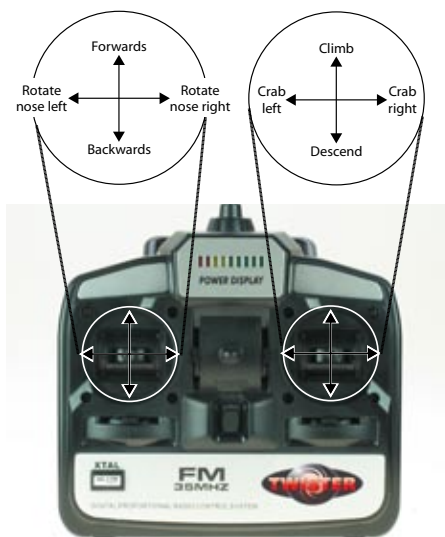


- ▼ Moving the stick to the left or right will rotate the nose to left or right. This is called 'yaw control'. See below:



FLIGHT CONTROLS MODE 1

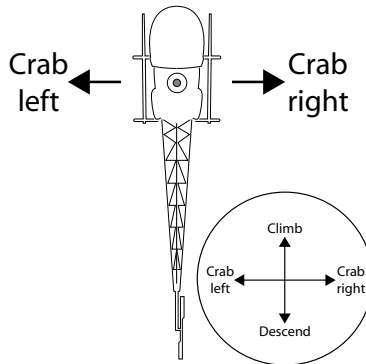
A. FLIGHT CONTROLS LAYOUT



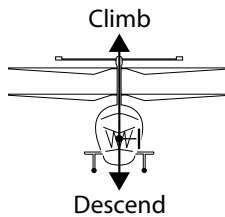
- ▼ Each dual axis stick unit of your transmitter controls 2 helicopter functions (complete with trimmers on each function) giving you control about all 4 axes of flight).

B. RIGHT STICK UNIT FUNCTIONS

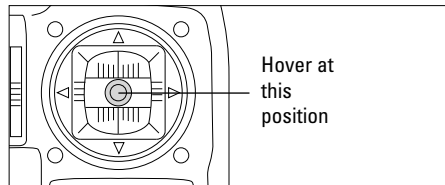
- ▼ The right stick operates the throttle (main rotor speed) and the 'cyclic' steering which moves the helicopter to the left/right in the horizontal plane. See below:



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



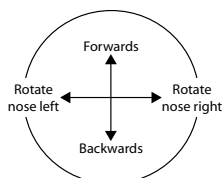
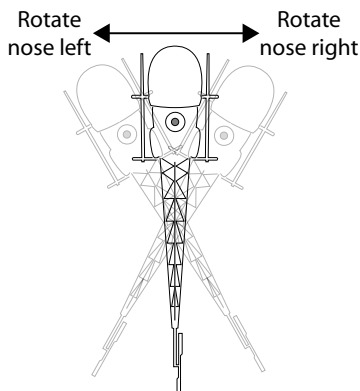
- ▼ The model hovers at approximately half power (at the middle stick position):



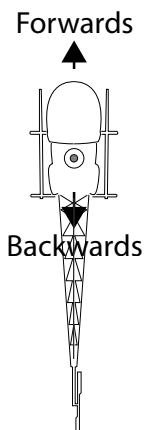


C. LEFT STICK UNIT FUNCTIONS

- ▼ 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

4 IN 1 UNIT ADJUSTORS



The 2 trimmers on the front of the '4-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 gyro tail stabilisation from 0 to 100%. 90% is usually the best setting.
- ▼ Yaw trimmer. The right trimmer adjusts tail trim (centring of the tailboom). 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.

WARNING!

If your model tips over or crashes or rotors are physically stalled and prevented from turning, you must immediately reduce throttle to avoid damage to the speed controllers and other components.

Crash damage is not covered by warranty.



HOW DOES A HELICOPTER FLY?

A helicopter must be controlled about 4 axes simultaneously; 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 Medevac transforms helicopter flight by making control so easy that the helicopter almost flies itself!

Transmitter stick movements

Helicopters require relatively small control inputs of relatively small duration. Do not move the sticks to extreme positions. A delicate touch is required on the sticks. The sticks should be allowed to return to neutral almost immediately after a control input is made. If you watch an experienced pilot hovering his helicopter, you will see that his transmitter sticks hardly move. This is the goal you will be working towards in this guide.

Height control

A helicopters rotating wings - the 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.

This method of helicopter height control is called 'fixed pitch'.

Height is managed using the throttle stick of your transmitter.

Push forward to climb, pull back to descend.

Yaw control

Yaw control is achieved by altering the speed of one main rotor relative to the other which causes a change in the torque generated by the main rotor and hence a rotation to left or right about the main rotor shaft.

When a helicopter is in the hover it can be yawed left or right.

Push the rudder stick left to yaw the nose of the helicopter to the left and push to the right to yaw the nose right.

Your Twister Medevac helicopter is fitted with a micro piezo gyro and electronic mixing system which automatically helps stabilise the tail making for much easier flight.

Steering control - fore and aft cyclic

When hovering, a brief forward push on the cyclic control stick will tilt the rotor disc forward causing the helicopter to move off in that direction. Pull the stick back gently to stop it. If you pull the stick back further, you start flying backwards.

Steering control - roll cyclic

When hovering, a brief right control stick movement will roll the rotor disc to the right and the helicopter will start moving to the right. 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.



FLIGHT TRAINING GUIDE

THE FLYING AREA

The flying area should be indoors in a large room or a hall or office. In this room you should have all doors closed as any wind can affect the movement of the Twister Medevac.

Make sure the take-off floor has a smooth surface rather than carpet which can trip up the Twister Medevac during ground handling.

WARNING!

You should be aware that the main rotor blades spin at a 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 come to terms with the flight characteristics of your Twister Medevac.

POSITIONING YOUR TWISTER MEDEVAC

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 tail swings right, therefore you must apply right tail rotor to correct this by pushing the yaw stick to the right.*

INCREASE THROTTLE GENTLY

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

***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 Medevac 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 or hop to the left, apply a little right roll trim and vice versa.

Adjust the trims until the Twister Medevac 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 Medevac 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 quickly enough to avoid tipping it over.

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 Medevac for a walk'.

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

Apply just enough power to make the helicopter light on the skids and add a few clicks of forward trim to tilt the rotor disc 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. Note that the on-board piezo gyro damps out any tail direction changes and so stabilizes the helicopter.

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 Medevac.

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 Medevac upright and that the hops become longer and higher.

Always make sure you watch the nose of your helicopter—not the tail. The gyro will keep the tail straight for you a lot of the time but you will 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 tail rotor (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 Medevac to the right and left using cyclic controls:

From the hover, briefly 'nudge' a small amount of right roll. Your Twister Medevac 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 your 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 Medevac—sometimes markedly. Please keep this in mind if you do fly outdoors (in calm conditions) and 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 breeze or even a 'thermal' passing through.

A training undercarriage can be a huge help by providing your Twister Medevac with a wide track and a degree of cushioning to aid stability and therefore help prevent 'tip-overs'. See the parts listing at the end of this manual. Another 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!

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 '4-in-1' receiver crystal is seated securely in the socket in the '4-in-1' unit.
- ▼ Check that both motor pinion gears are still engaged with the main drive gears.
- ▼ Check Li-po battery is charged.
- ▼ Check state of transmitter batteries.
- ▼ Check green light on 4-in-1 unit is glowing.

HELICOPTER SPINS UNCONTROLLABLY

- ▼ Check main gear retaining set screws
- ▼ Check Gyro gain trimmer (4-in-1 unit) to ensure gyro gain is set approximately 90%.

HELICOPTER ACCELERATES AWAY WHEN STICKS ARE NEUTRAL

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

VIBRATION

- ▼ 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's

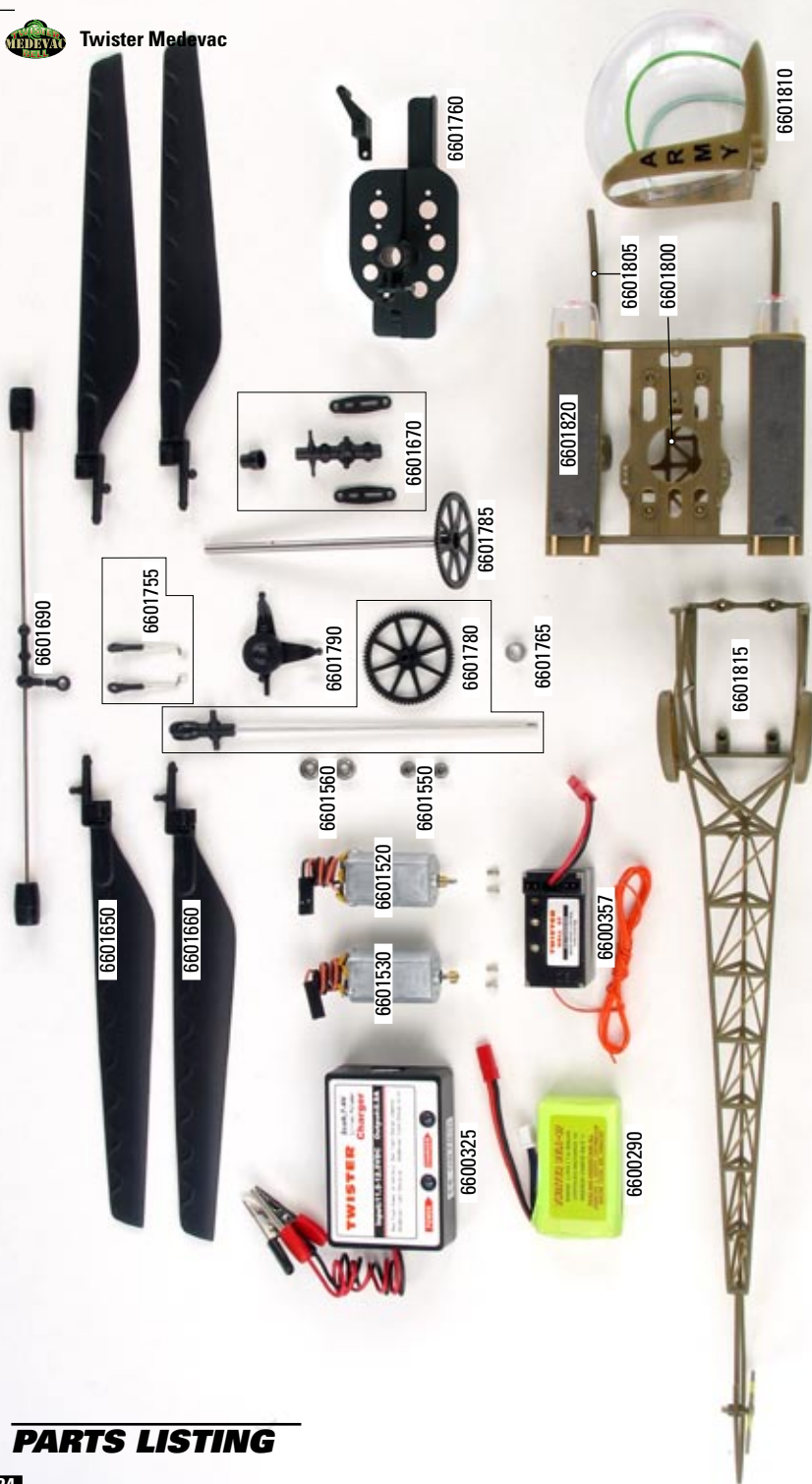
- Before charging your battery check for any damage e.g. check if the battery has expanded or swollen in size or if the battery cells have been punctured. If any of the above is true: DO NOT CHARGE THE BATTERY!

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 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 its 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 anything with high temperatures.
- 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.

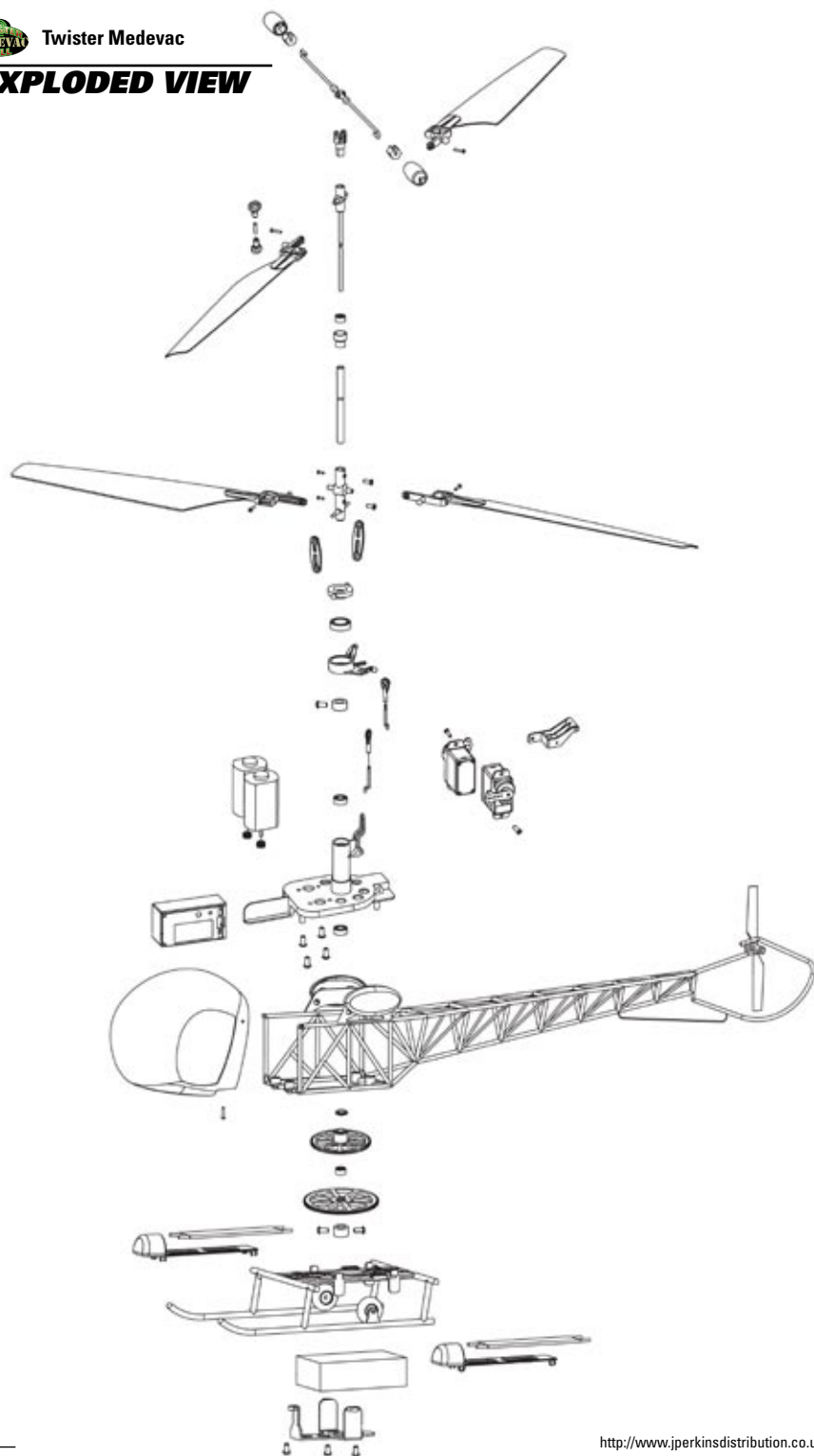


PARTS LISTING

Part No.	Description	Part No.	Description
5510602	ALKALINE AA PENCILS	6601775	TWISTER MEDEVAC TRAINING UNDERCARRIAGE SET
6600290	TWISTER MEDEVAC LI-POLY BATTERY	6601780	TWISTER MEDEVAC INNER MAIN SHAFT
6600325	TWISTER BELL 47 2-CELL 7.4V LI-PO CHARGER	6601785	TWISTER MEDEVAC OUTER SHAFT & MAIN GEAR SET
6600330	TWISTER 240v (TO 12v DC) POWER SUPPLY (3 PIN)	6601790	TWISTER MEDEVAC SWASHPLATE
6600331	TWISTER 240v (TO 12v DC) POWER SUPPLY (2 PIN)	6601795	TWISTER MEDEVAC MOTOR HEAT SINK
6600357	TWISTER MEDEVAC 4-IN-1 ESC/GYRO/MIXER/RX UNIT	6601800	TWISTER MEDEVAC BATT SUPPORT SET GREEN
6601520	TWISTER MEDEVAC MOTOR A (LOWER)/W/METAL PINION	6601802	TWISTER MEDEVAC BATT SUPPORT SET BLUE
6601530	TWISTER MEDEVAC MOTOR B (UPPER)/W/METAL PINION	6601805	TWISTER MEDEVAC UNDERCARRIAGE SET GREEN
6601550	TWISTER MEDEVAC INNER MAIN SHAFT BEARINGS	6601807	TWISTER MEDEVAC UNDERCARRIAGE SET BLUE
6601560	TWISTER MEDEVAC OUTER MAIN SHAFT BEARINGS	6601810	TWISTER MEDEVAC CANOPY PAINTED GREEN
6601650	TWISTER MEDEVAC MAIN BLADES UPPER	6601812	TWISTER MEDEVAC CANOPY PAINTED BLUE
6601660	TWISTER MEDEVAC MAIN BLADES LOWER	6601815	TWISTER MEDEVAC TAIL BOOM SECTION COMP.GREEN
6601670	TWISTER MEDEVAC ROTOR HUB AND LINKS SET	6601817	TWISTER MEDEVAC TAIL BOOM SECTION COMP.BLUE
6601690	TWISTER MEDEVAC FLYBAR AND WEIGHTS SET	6601820	TWISTER MEDEVAC STRETCHER GREEN
6601750	TWISTER MEDEVAC ALLEN KEY/TIE WRAP/TAPE	6601822	TWISTER MEDEVAC STRETCHER BLUE
6601755	TWISTER MEDEVAC PUSHROD SET	7711995	TWISTER MEDEVAC TRANSMITTER 4-CH 35mHz
6601760	TWISTER MEDEVAC MAIN CHASSIS	7712110	SUPER MICRO 7.5g SERVO (S7.5 EnErG)
6601765	TWISTER MEDEVAC MAIN SHAFT RETAINING COLLAR	6600362	TWISTER/EnErG 7.5g SERVO GEAR SET
6601770	TWISTER MEDEVAC BOLT/NUT/WASHER SET	7711120	TWISTER 35FM CRYSTAL PAIR (ASSORTED FREQUENCY)
		7711310	TWISTER TX AERIAL ONLY



EXPLODED VIEW



TWISTER BELL MEDEVAC

READY TO FLY 4 CHANNEL R/C HELICOPTER

Assembly & Flight Training guide

**TEST-FLOWN &
FLIGHT-GUARANTEED**
So you know it flies!



Australasia agents: Model Engines,
Melbourne, Australia



www.modelengines.com.au

European agents: J Perkins Distribution,
Lenham, England



www.jperkinsdistribution.co.uk