The purchase and use of this RC model constitutes an agreement to waive any liability of the manufacturer, dealer, or seller of any accident, injury, death or property damage that may occur when using this product. CWcopter is not responsible for how this RC aircraft is used or maintained. All responsibility for this RC aircraft’s use and maintenance is solely that of the owner and pilot. If you, as the owner and pilot, do not agree with and accept the above terms, please return this product unused, unmodified, and in a resalable condition to CWcopter for a refund of the purchase price.
Thank you for purchasing this CWcopter product... While flying your CWcopter is a lot of fun, please keep safety in mind at all times. Not recommended for children under 14. It is recommended that adult supervision be present when minors use this product. Please carefully read the warning below before attempting to begin using your CWcopter model.

ATTENTION

The products you have purchased must be used with caution to avoid serious injury to yourself or others! Read the following and always practice safety when using any of our products.

Batteries & electronic items
Never leave a charging battery unattended.
Never leave a battery (in any state) in an area which could be affected by fire.
Never leave any electronic item switched on while unattended.

Motors & other rotating items
Never stand in close proximity to an armed motor. (motor connected to power source)
Propellers & other rotating items can become broken or chipped during use. Always ensure the item is free from cracks or defects before use as they could possibly shatter, causing serious injury.
Always ensure there is nobody else nearby when operating your item.
Never fly in an area which has other people or is close to other property.
Always wear eye protection and keep your hands well away from rotating objects.

Any use of our products constitutes an understanding of this warning.
FRAME ASSEMBLY
Identification of frame plates  
Top & middle plates have a protective film that must be removed prior to assembly.

Stack the plates in order and determine which sides align holes the best.  
Hint: Once you determine the best plate orientations, mark the bottom of each plate with a small dot with a felt-tip marker to help you retain the correct orientation during assembly.
Attach the six ½” threaded standoffs to the bottom surface of the top plate using 6-32x1/4” screws in the locations shown. Loctite recommended.

Insert three 6-32 x 7/8” screws through the top plate in the locations shown. Place an unthreaded ½” spacers over each screw.

Place middle plate in position (bottom surface up). Secure with 6-32x1/4” screws in the rear* and outer holes. Place three threaded 5/8” standoffs on the protruding screws in the center of the plate. Loctite recommended.

* For VTquad models, the four 6-32x1/4” rear screws will be replaced with four 6-32x1/2” screws. These screws are also used to mount the landing gear struts.
Secure bottom plate to assembly (bottom surface up) using three 6-32x1/2” screws. **HINT: If you are planning to use 4S batteries in your model** you may want to use the included 6-32 nuts as spacers between the plate and the 5/8” standoffs.

Using the included Velcro, stick the hook-side material in the locations shown. You may need to trim the material with scissors to get the pieces to not touch the fasteners in the rear section on the top assembly.

**Hint:** You may want stick a piece of the loop(fuzzy) velcro on the upper portion of the battery compartment. This will allow the battery secure strap to attach underneath the top plate and provides some cushion for the battery when in place.
Install the front motor arms as shown using a 6-32x7/8” screw and acorn nut. Use Loctite. Regularly check and tighten these screws. **It is critical that these screws are tight and the arms do not pivot easily. This may help reduce the chance of the arms moving out of position when in flight.**

Install the 2-sided Velcro straps as shown below to secure the arms in flight position and secure battery in the battery bay.
Prepare ESCs for installation *(some kits have bullet connectors already installed on the ESCs)*

- Solder the male 3.5 bullet connectors on the power input wires of each ESC. (included). Both wires use the male bullet connector. The Power distribution harness has female connectors pre-installed.
- Use the included shrink tube to cover the solder joints

Prepare motors for installation

- Locate the two Delrin motor mounts in the bag with the frame parts
- Install the mounts on the 1400kV brushless motors using the screws included in the motor packaging. It is recommended to use loctite on these screws.
- These mounts are superior to the included metal mounts in that they will not stretch the nylon cable ties and allow the motor to wobble and potentially slide off the mount resulting in a crash.

Install the motor/mount assemblies on the two front arms using the large zip-ties as shown.
The CWtricopter tailboom comes pre-assembled.

*Note: Please remove acorn nuts retaining the servo mount/fin and reassemble using loctite.*

Please reference the above photos should you need to repair/replace the tailboom.
Insert boom into the frame assembly. Tighten the screws (loctite recommended) on top and bottom to secure the boom in place.

Install the tail servo as shown in photos below. Be sure to position the servo so the base of the output spline (or topmost part of servo case) is aligned with the trailing edge of the fin. It is also critical that the bottom of the servo (with mounting tape) is fully seated on the boom and the side of the servo fully is in contact with the fin. Select the servo horn as shown and install it perpendicular to the servo at the approximate 50% travel position. **Hint: Using an external Rx battery (4.8-6V), bind the receiver and plug the servo into the rudder channel. You can then determine the true neutral position of the servo and mount the horn level.**

It is critical that the servo horn retaining screw is secured with loctite
Tail pivot pushrod-
Using large pliers to firmly grip the pushrod as shown below, make a 90-degree bend in the rod about 1/8” below the threads. Do not bend the rod in the threaded portion...IT WILL BREAK.

Enlarge the outermost hole on the servo horn to approximately 2mm. (You can use a very small drill or carefully enlarge the hole with an X-acto knife). Next, insert the long part of the rod through the small hole on the leading edge of the pivot block as shown. Orient the nylon clevis so the pin goes through the servo horn from the rear. Screw the clevis up or down so that the pivot block is level when the servo horn is level. Next, using wire cutters, cut off the excess rod where it exits the block.

Options- #1) Repeat the process above for the left side of the pivot block to have a push-pull set-up on the pivot block. This will reduce some of the slop in the system. An extra pushrod has been included in the kit.
#2) You can slide a small piece (approx. 1/8”) of fuel tubing onto the clevis to secure it in the closed position.
Mounting the rear motor-

Reference the pictures on this page, mount the rear motor using 30-50 pound zip-ties (the large ties included in the kit are 40 pound).

It is important that the motor leads are on the left side of the model.

Please orient the zip-ties as shown in the photos to enable them to be fully tightened to reduce movement of the motor on the pivot block.

The servo lead and the motor leads (on the left side of the servo mount plate) can be secured with a small zip-tie using the 2 holes above and below the boom.
Locate the flight controller board in the kit. The controller board should be positioned on the top frame plate as shown. Please be sure to note the leading corner of the board is marked with arrows. **Hint:** Clean the frame plate with alcohol and allow to dry. This will give the mounting tape a clean, oil-free surface to adhere to.
Connect servo lead extension to the tail servo lead. Thread the male end of the extension through the large hole in the top frame plate as shown and plug the lead into the #4 position as shown (note: negative (black or brown) lead is always oriented to edge of board)

Next locate the 6-ch receiver in the kit. Install the 4 male-to-male leads in the THRO, AIL, ELEV, & RUDD slots with the signal (orange lead toward the label side of the receiver (RX)). Install the RX as shown below and plug the four leads into the respective headers on the board (neg lead oriented toward the edge of the board)

Additional pictures on next page
Please use the following pictures to guide installation of the ESCs and power distribution header. ESC’s are identified as follows: M1= front left motor, M2= front right motor, M3= rear motor, M4= tail servo
• Connect power distribution harness to the three ESC as shown.
• For the rear ESC, thread the control lead through the large hole in the upper frame plate from the bottom. Plug the lead into the M3 header.
• For the left ESC, plug the control lead into the M1 header.
• For the right ESC, plug the control lead into the M2 header.
The ESCs should be secured to the arms using the provided double-sided tape and a large zip-tie.

Neatly secure the wires on the unit with the small zip-ties. Please see the photos for suggestions.
Install the props on the 3 motors using a 1.5mm (or similar size) allen wrench.  
**Hint:** It is recommended that the props be balanced for best performance.

Follow the set up instructions in the next section. Before attempting to fly the model be sure the motors rotate in the correct direction (CCW). To change the motor direction, swap the connection of any 2 of the three motor leads.
**CW Tricopter set-up instructions**

**Battery**
Recommended battery is a 3-cell (11.1V) pack. You should get 5-8 minutes of flight time from a 2200mA pack. Higher mAh capacity will give a longer flight time.

**Transmitter (TX)**
A Spektrum transmitter is required for use with the Tricopter. The model type should be either airplane or single servo helicopter (non-CCPM)

**Binding the model to your Spektrum radio**
The included receiver (RX) is Spektrum DSM2 compatible.
With the binding plug in place in the RX, plug your charged battery into the model. The red LED inside the reciever should begin flashing rapidly, indicating the RX is in bind mode. Turn on the Spektrum TX in its respective bind mode (It should be in the model you plan to assign to the tricopter)
The red LED in the RX should begin to flash slowly and eventually stay on solid. The RX & TX are now bound together. Disconnect the battery on the Tricopter and remove the bind plug from the RX.
Programming your radio for the Tricopter  (These settings are based on typical Spektrum radios, please confirm control inputs are correct for your specific radio before attempting to fly the model)

**Servo direction:** Throttle- Normal (N), Aileron- Reverse (R), Elevator- R, Rudder-N
Instructions for releasing safety lock:
Even with the battery connected, no functions will operate until the controller is armed. This safety feature’s purpose to prevent unintended start-up of the motors.

To arm the system: With the throttle stick (left stick) in the full idle (down) position, input full left rudder on the left stick...Hold for approximately 5 seconds until a LED on the controller card illuminates. If the LED will not illuminate, check that the throttle trim is in the full down position and try again.

Once the LED is illuminated, the 3 propellers can start spinning with any application of throttle.

Note: The gyros on the controll board will re-calibrate anytime the motors are shut down and re-started.

Confirm control direction the following way:

Firmly hold the tricopter from below the baseplate, making sure the propellers are not near anything and cannot strike anything when they spin. Slowly advance the throttle until at least one of the motors (usually the left one) begins turning (about ¼ throttle). Do not advance throttle beyond ½ as the model may become difficult to hold.

Now, move the right TX joystick to the left, giving a left aileron command. The motor on the front, right boom should begin spinning (or increase its speed) to tilt the model to the left. If the left motor increases speed (tilting the model right), the aileron channel in your TX is reversed.
• Next, move the right joystick forward, giving a down elevator command. The rear motor should now spin (or increase its speed) tilting the model forward. If the rear motor only starts (or speeds up) if you pull back on the elevator stick, the elevator channel is reversed in your radio.

• Next, move the left joystick to the left, giving a left rudder command. The rear motor should now tilt to the right side of the model. If the rear motor tilts to the left side, the rudder channel in your radio is reversed.

• Recommended exponential settings: Aileron: 25%, Elevator: 25%, Rudder: 25%

These settings can be reduced at a later time if you would like the aircraft to have a “quicker” feel.

Optional – Increased performance

To make your CWTricopter more aerobatic, increase the travel on the Aileron, Elevator & Rudder channel. Try out 125% travel on each channel and increase until you get the roll, flip & spin rate you desire. You can see much higher performance with GWS 9x5 props (Direct Drive, not SF- available from your local hobby shop or from CWTricopter). Your flight time will decrease with use of larger props.

Set-up recommendations:

<table>
<thead>
<tr>
<th>Skill level</th>
<th>Desired CW Tricopter performance characteristics</th>
<th>Prop size</th>
<th>Servo travel (ail/elev/rudd)</th>
<th>Expo (ail/elev/rudd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Novice</td>
<td>Stable hover, slower to react to extreme control input</td>
<td>8x4</td>
<td>New pilot: (80/80/80) Experienced Pilot: (100/100/100)</td>
<td>40/40/25</td>
</tr>
<tr>
<td>Intermediate</td>
<td>Stable hover, more sensitive to extreme control inputs, quicker flip &amp; roll rate</td>
<td>8x4 to 9x5</td>
<td>125/125/130</td>
<td>35/35/0</td>
</tr>
<tr>
<td>Advanced</td>
<td>Stable hover, very sensitive to control inputs, extreme flip &amp; roll rate</td>
<td>9x5 to 9x7.5</td>
<td>150/150/150</td>
<td>45/45/0</td>
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</tbody>
</table>