

NIGHT RANGER™ 3D



VENOM NIGHT RANGER 3D PILOT'S HANDBOOK

READ BEFORE FLIGHT!



VENF-6225-1



I. INTRODUCTION

The Venom Night Ranger 3D is a high performance Ready-to-Fly Collective Pitch (CP) Aerobatic Electric Helicopter for indoor flying and outdoors on calm days. At about 400 grams, the Venom Night Ranger 3D will fly for 5-8 minutes on the 9 Cell 650mAh Ni-MH battery, depending on the type of flight. **Although the Venom Night Ranger 3D is not difficult to operate, it does take more skill and practice to master than a fixed pitch heli. We recommend that you read these instructions thoroughly and carefully first.** If you have any questions, please feel free to call our customer service department or contact your local hobby shop or local flying club. All are excellent resources for information and are more than willing to help new hobbyists.

SPECIFICATIONS:

Model No	VENF-6225
Model Name	Venom Night Ranger 3D
Main Rotor Diameter	570 mm
Fuselage Length	530 mm
Weight	390 g
Battery	10.8v 9 Cell 650 mah NiMH
Radio Controller	6 Channel FM
Servo	3 Micro Servos

GUARANTEE:

We guarantee that the Venom Night Ranger 3D to be free of manufacturing faults and material defects. This product has been checked and adjusted individually before leaving the manufacturer. Please contact your local hobby shop for replacement parts and technical support or contact **Venom Air Corps Customer Service** at **800.705.0620** or **customerservice@venom-aircorps.com**. To help identify broken or damaged parts we have included a detailed parts list and assembly diagram at the end of this instruction manual.



WARNING! READ BEFORE FLIGHT

The Venom Night Ranger 3D is not a toy. It is a precision machine requiring proper assembly and setup to avoid accidents and it is the responsibility of the owner to operate this product in a safe manner as it can cause serious personal injury and damage to property due to carelessness or misuse.

When charging the battery pack, do not overcharge! If batteries get hot during charging, discontinue charging immediately and disconnect the battery from the charger. Never leave battery unattended while charging. If you are unsure of how to charge this battery, please contact Venom Air Corps or seek the advice of your local hobby shop. Never let children charge batteries without adult supervision.

To avoid an out of control model always turn the transmitter on first then connect the battery to the heli. When turning off the heli, always disconnect the battery first, then turn off the transmitter. If the orders are reversed the heli may become uncontrollable and cause serious damage.

If you are in doubt of your ability, we strongly recommend that you seek assistance from experienced radio controlled helicopter modelers or join your local model flying club to gain the required knowledge and skill. As the manufacturer and distributor, we assume no liability for the use of this product.

Children under the age of fourteen (14) are strictly prohibited from playing with this electric helicopter.

II. INSTALLATION

The Venom Night Ranger 3D (VNR 3D) is a Ready-to-Fly Electric Helicopter. All you need to do is check the blade tension and install the battery. The battery has been partially charged at the factory and should have enough power to perform the initial flight check and trimming. **Please make sure the battery pack has been fully charged before performing 3D aerobatic maneuvers or fast forward flight.**

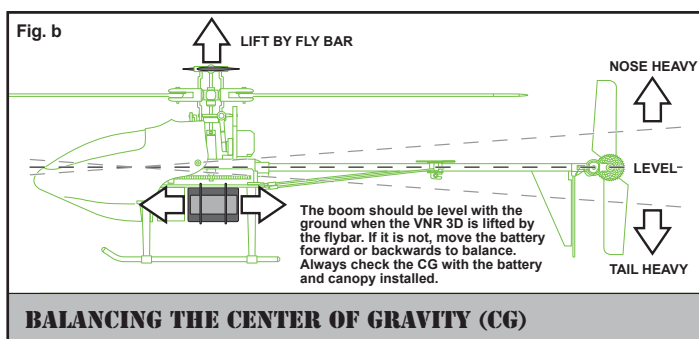
1. The main rotor blades are attached at the factory. Before flight make sure that the blades are tight, but still free enough to straighten out when they spin. If they are too loose the blades may wobble and make the VNR 3D unstable during flight.
2. To install the battery, disassemble the canopy by gradually pulling the rubber grommets off the horizontal mount bar.



3. Plug in the supplied wall charger and attach the battery pack.
Caution: The battery will be fully charged in about 2 hours if it's completely discharged. Do not overcharge! Overcharging the battery will cause serious damage or may cause the battery to explode! The battery has finished charging when it is warm to the touch. If the battery gets hot during charging, discontinue charging immediately and disconnect the battery from the charger. Never leave the battery unattended while charging. If you are unsure of how to charge this battery, please contact Venom Air Corps or seek the advice of your local hobby shop. Never let children charge batteries without adult supervision.
4. To install the battery, slide the battery under the O-rings on the bottom of the aluminum chassis plate, behind the motor. If the battery feels loose, wrap the O-ring around one of the chassis lugs a second time to remove any slack. (Fig. a/pg. 2)
5. Reinstall the canopy by pushing the two rubber grommets onto the horizontal mount bar and insert the cutouts over the front landing skid struts.
6. To adjust the center of gravity, position the flybar at a 90 degree angle to the tail boom. Pick up the VNR 3D by the flybar and position the battery so that the tail boom is parallel to the floor. (Fig. b).

Optional Chargers:

If you want to shorten the battery charge times or charge from several different AC/DC power sources, we recommend purchasing a high quality peak detection battery charger that can charge NiHM battery packs at a rate of 0.8 amps (800mA). We do not recommend charging the battery pack at more than 1.0 amps (1000mA). A good peak charger should charge the pack in 45 minutes or less.



Lipo Batteries:

Your VNR 3D heli comes from the factory ready to use LiPO battery packs. If you want to use LiPO Power, we recommend using a **3S 1000 - 3S 1250 mah** LiPO pack. If you use a LiPO battery, make sure you use a LiPO Compatible Battery Charger and follow the manufacturer's recommended charging instructions. **DO NOT USE THE SUPPLIED CHARGER WITH LiPO BATTERIES!** Charging a LiPO battery pack with a non LiPO charger will damage the battery pack and possibly create an explosion or fire. LiPO batteries will create extra heat in the main and tail motors so we recommend using the optional **High Performance Heat Sink Set (VENF-7747)** to help dissipate heat.

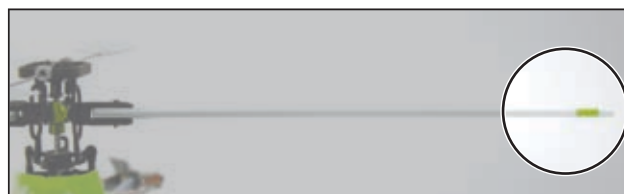
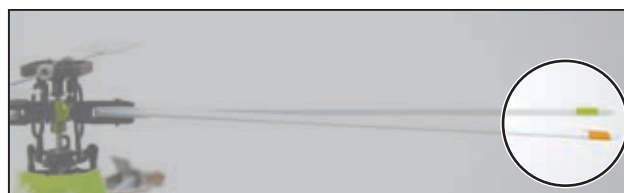
III. BLADE TRACKING

Blade tracking is a crucial component to the proper flight characteristics of your VNR 3D. If the blades do not track properly (if they do not follow the same path when they are spinning) they can create vibrations, instability and drag on the motor which will create a loss in power. The tracking has been set at the factory but may need some minor adjustment to optimize it. The blade tracking should be checked before every flight or after any changes or repairs have been made.

Check the Tracking:

To check the tracking of the blades, the battery must be installed, the gyro initiated and the two different colored blade tracking decals placed on each blade tip. Place the VNR 3D on an elevated stable surface so that you can view the blades at eye level. Make sure you are a safe distance from the blades when applying the throttle. As you bring the blades up to speed use the colored tracking decals to note which blade is tracking lowest (Fig. c). Power down the VNR 3D and adjust the pitch of the low blade by altering the length of the control link in one turn increments. Turn the control link so that it starts to lengthen, bringing the blade up. Tightening the control link will cause the blade to go down. After each adjustment, check the tracking and readjust as necessary until the blades track as close to even as possible.

Fig. c Checking the Blade Tracking





IV. ADJUSTMENTS & TUNING

MODE I - EUROPE & AUSTRALIA



Attention:

Before connecting the battery to the control board, you must confirm the following settings:

- A. The crystals on the transmitter and receiver must match each other.
- B. Antenna is screwed in and extended, batteries are fully charged and transmitter has been turned on.
- C. The throttle stick (RIGHT CONTROL STICK) must be located in the throttle down position, otherwise serious damage to the VNR 3D and personal injury may occur!
- D. Make sure the 3D Mode switch is in the Normal Mode Position.

If all of the above settings are confirmed, connect the battery to the control board.

1. After the battery is connected, the red indicator light on the heli control board will start blinking rapidly for 5-10 seconds, which indicates that the control board and gyro are initializing. This process is for self-adjustment of the system. **DO NOT TOUCH THE VNR 3D WHEN THE GYRO IS INITIALIZING!** Once initialized, the indicator light will be a solid red light. If the light does not blink after the battery is connected, please check that you have switched on the transmitter and that the battery has been fully charged. **NOTE:** If the throttle stick is not in the Throttle Down position when the battery is connected, the gyro will still initialize but the throttle stick will not be active until it is returned to the Throttle Down position.
2. If the main rotor blades start rotating, and the right control stick has not been pushed forward, slowly adjust the transmitter trim ③ (see picture) until they stop rotating. If the tail blades start rotating, carefully adjust the transmitter trim ① until they stop operating or rotate slowly.
3. Test the flight controls to make sure they are operating properly and will move the swash plate in the direction you want to fly. Push the left control stick forward and the swash plate will tilt forward. Push the right control stick to the right and the swash plate will tilt to the right.
4. Push the right control stick slightly forward, keep your fingers, eyes and other objects well away from the rotating parts. When the main rotor blades start rotating, the tail blades should start rotating simultaneously.
5. Slowly push the right control stick forward to increase rotor speed. The VNR 3D may not take off vertically; it may go forward or backwards, left or right. Use trim sliders ② & ④ to fine tune the VNR 3D while hovering. You may also find the heli's nose will swing to the left or right side when you increase throttle. In this case, you need to adjust the transmitter trim ①.

IV. ADJUSTMENTS & TUNING

MODE II - NORTH AMERICA



Attention:

Before connecting the battery to the control board, you must confirm the following settings:

- A. The crystals on the transmitter and receiver must match each other.
- B. Antenna is screwed in and extended, batteries are fully charged and transmitter has been turned on.
- C. The throttle stick (LEFT CONTROL STICK) must be located in the throttle down position, otherwise serious damage to the VNR 3D and personal injury may occur!
- D. Make sure the 3D Mode switch is in the Normal Mode Position.

If all of the above settings are confirmed, connect the battery to the control board.

1. After the battery is connected, the red indicator light on the heli control board will start blinking rapidly for 5-10 seconds, which indicates that the control board and gyro are initializing. This process is for self-adjustment of the system. **DO NOT TOUCH THE VNR 3D WHEN THE GYRO IS INITIALIZING!** Once initialized, the indicator light will be a solid red light. If the light does not blink after the battery is connected, please check that you have switched on the transmitter and that the battery has been fully charged. **NOTE:** If the throttle stick is not in the Throttle Down position when the battery is connected, the gyro will still initialize but the throttle stick will not be active until it is returned to the Throttle Down position.
2. If the main rotor blades start rotating, and the left control stick has not been pushed forward, slowly adjust the transmitter trim ② (see picture) until they stop rotating. If the tail blades start rotating, carefully adjust the transmitter trim ① until they stop operating or rotate slowly.
3. Test the flight controls to make sure they are operating properly and will move the swash plate in the direction you want to fly. Push the right control stick forward and the swash plate will tilt forward. Push the right control stick to the right and the swash plate will tilt to the right.
4. Push the left control stick slightly forward, keep your fingers, eyes and other objects well away from the rotating parts. When the main rotor blades start rotating, the tail blades should start rotating simultaneously.
5. Slowly push the left control stick forward to increase rotor speed. The VNR 3D may not take off vertically; it may go forward or backwards, left or right. Use trim sliders ③ & ④ to fine tune the VNR 3D while hovering. You may also find the heli's nose will swing to the left or right side when you increase throttle. In this case, you need to adjust the transmitter trim ①.

- The VNR 3D is equipped with a gyro that controls the RPM of the tail rotor to compensate for main rotor torque. To adjust the sensitivity of the gyros effect, use a micro flat blade screwdriver to rotate the Limit and Delay Adjustment Pot (Fig. d).

Limit Adjustment Pot:

The Limit Adjustment Pot adjusts how fast the tail rotor rotates the heli around its axis. If the rotation is slow, turn the Limit Adjustment Pot clockwise to increase the speed of the rotation. If it is too fast, turn the adjustment pot counterclockwise to slow the rotation. **NOTE:** The speed should be adjusted to suit flying styles and ability. Beginner pilots should learn with a slower tail response to keep them from over controlling the tail.

Delay Adjustment Pot:

The Delay Adjustment Pot adjusts the Gyro Gain or how fast the gyro reacts to what the heli is doing and how fast it corrects and counteracts the torque from the main motor. Turn the Delay Adjustment Pot clockwise to increase the sensitivity or counterclockwise to decrease the sensitivity of the gyro. If the gyro gain is too high the tail will twitch from side to side and make the heli difficult to control. If the gyro gain is too low the tail will swing to the right when gaining altitude but will slowly correct in hover. When correctly set, the tail should remain solid with no tail swing and should have crisp tail movement. **NOTE: A properly set gyro can be the difference between a fun flying experience and a lot of frustration.**

- Pitch And Throttle Adjustment Dials: (Fig. e)**

Pitch Adjustment Dial:

As throttle input increases in the Normal Flight mode, the Cyclic Collective Pitch Mixing (CCPM) system automatically adds pitch to the blades to help lift the heli off the ground. The amount of pitch and how fast it is added can affect the flight characteristics of the VNR 3D. You can adjust the amount of added pitch using the Pitch Adjustment Dial. A lower pitch setting makes the VNR 3D's flight characteristics more docile. A higher pitch setting will give the heli a more aggressive flight characteristic. Beginning pilots should learn with a medium to docile pitch setting.

Throttle Adjustment Dial:

The Throttle Adjustment Dial works in much the same way as the Pitch Adjustment Dial but it controls the head speed (RPM of the blades) instead of pitch input. A higher head speed will make the cyclic controls more responsive to stick inputs but it will shorten the flight time. A slower head speed will make the helicopter more docile.

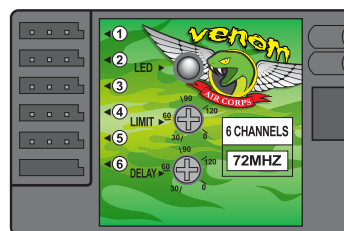
NOTE: If you increase the amount of pitch, you must also increase the amount of throttle to keep the heli from "bogging" and feeling sluggish.

Transmitter DIP Switches:

- If you have completed all of the previous set up steps and your model still does not seem to respond correctly, double check the DIP switches on the back of the transmitter to make sure they are in the correct positions. Using the switch diagram (Fig. f), make sure the first 4 dip switches are in the correct positions. If the heli still does not respond correctly, please do not hesitate to seek the assistance of your local Hobby Shop or call our Customer Service Department at 800-705-0620.

- You have now finished checking all the settings and adjustments. Pull the throttle stick to the Throttle Down position and disconnect the battery from the control board first, then turn the transmitter's power off. Never turn the transmitter off before disconnecting the battery as the VNR 3D may become uncontrollable.**

Fig. d



Front of Receiver/Gyro

Limit Adjustment Pot
(Adjusts amount of Gyro response to stick input)



Delay Adjustment Pot
(Adjusts how fast the gyro reacts)



Fig. e

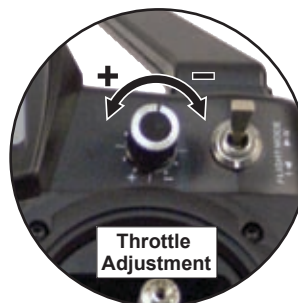
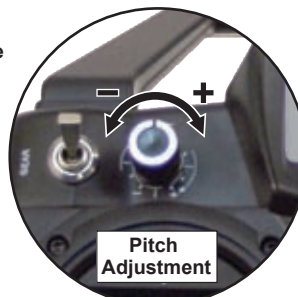
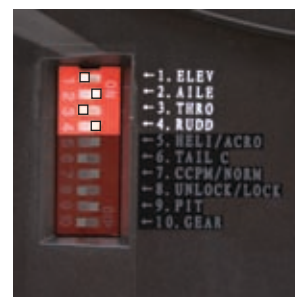


Fig. f

Factory Settings

When checking the DIP switch positions, you will only need to verify switches #1-4. The other DIP switches should not be touched.



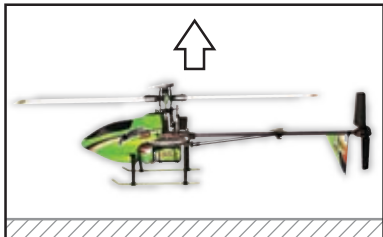
NOTE!
Proper Blade Tracking is crucial to a proper flying Collective Pitch Heli. Refer to the Blade Tracking Instructions on PAGE 03 before flying your VNR 3D for the first time or after any repairs or adjustments. Blades that are not tracking properly can lead to erratic and unstable flying.





V. CONTROLLING THE VNR 3D

LIFT THE HELICOPTER



Mode I
(Europe/ Australia)



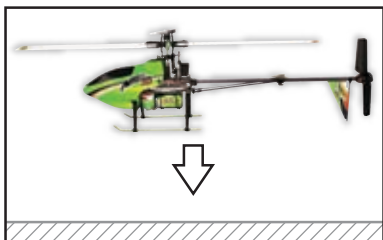
Push Right control stick forward.

Mode II
(North/South America)



Push Left control stick forward.

LOWER THE HELICOPTER

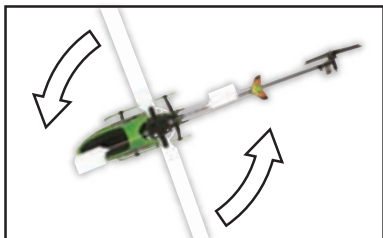


Pull Right control stick backward.



Pull Left control stick backward.

ROTATE LEFT

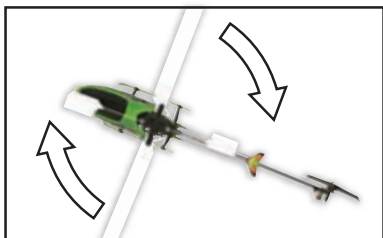


Push Left control stick left.



Push Left control stick left.

ROTATE RIGHT



Push Left control stick right.



Push Left control stick right.

The principle of flying:

The VNR 3D is a 3D Aerobatic CP Heli that utilizes direct CCPM to control cyclic and pitch inputs. The cyclic control system consists of servos, swashplate, stabilizer and main rotor blades. Their pitch angle is varied cyclically by the servos via the swashplate. This action tilts the rotational plane of the flybar paddles, and thereby the main rotor and the swashplate. The CCPM system on the VNR 3D uses three channels (servos) to transfer control inputs to the swashplate. To make sure the control input forces are distributed evenly to the swashplate, the three servo control points are evenly spaced 120° apart. Unlike Fixed Pitch Helis that climb and descend by varying the speed of the rotor blades (more or less throttle), a Collective Pitch Heli uses a constant rotor speed and varies the pitch (angle) of the blades to climb and descend. In 3D mode (explained later in this manual), the VNR 3D can change blade pitch positively and negatively to allow it to fly inverted and perform other aerobatic maneuvers. Like most conventional helis, the VNR 3D always rotates around its vertical axis and the tail rotor counteracts this unwanted rotation by producing thrust in the lateral directions. The tail rotor's thrust can be varied purposely in order to change the VNR 3D's heading. There are two basic functions required to control the VNR 3D: (1) climbing and descending is controlled by altering the pitch of the blades, (2) rotation around the vertical axis is controlled through the thrust of the tail rotor by varying its rotational speed. However, you must also be able to steer the VNR 3D forwards and backwards and to both sides. This task is carried out by the cyclic control system. If the swashplate inclines forwards, the plane of the flybar paddles also inclines forwards. The result is that the thrust of the rotor is directed slightly towards the rear instead of vertically, and the VNR 3D responds by moving in the forward direction. There are four control functions of the control system, and we need all of them to properly fly the VNR 3D.

Flying Environments:

The VNR 3D will fly in a spacious room without any obstacles or outdoors with calm winds up to 5-7 mph. Make sure that the air is calm. Drafts caused by open windows or doors should be avoided. We recommend learning in a room with a flat, smooth floor on which the VNR 3D can slide and where the air is calm. Soft carpet is not a good choice for flying, because it could hook the skid of the VNR 3D and cause damage.

Attention: Errors and carelessness in assembling and flying the Venom Night Ranger 3D can result in serious personal injury and damage to property. Never touch the spinning rotor blades or any other exposed moving parts.

Operation Procedures:

1. Place the VNR 3D in the middle of the room, you should always stand at least 6 ft (2m) from the VNR 3D and behind the tail. Make sure that your VNR 3D and transmitter have been assembled properly and adjusted completely. **Switch the transmitter on, then connect the fully charged battery to let the gyro initiate.** Once the gyro initiates, check once more that the servos are operating correctly before proceeding.
2. Now you are ready to start learning to fly. The control diagrams on the next two pages will help you trim and fly the heli.
3. Initially you do not need to worry about how to operate your VNR 3D skillfully. Through practice, you will become more confident operating the controls and adjusting the throttle. When your fingers respond to the movements of the VNR 3D spontaneously, you are ready for more advanced flying. Please note that the directions described on this page are if you are facing the tail of the VNR 3D. If you are facing the nose left and right will be reversed as your right is now the VNR 3D's left.

V. CONTROLLING THE VNR 3D (CONT)

4. Push the throttle up gradually until the VNR 3D starts to become light. The VNR 3D may initially swing to the left when you increase throttle. This is because of the thrust of the tail rotor and the rotation of the main rotor (this is an unavoidable deviation during take off). Open the throttle gradually until the VNR 3D becomes light, and then carefully move the throttle stick further until it is ready to lift off. Observing the VNR 3D's response, correct any movement using the corresponding trim settings if necessary. Do not lift off the ground until you are confident that you have set the trims correctly. **Don't fly too high, keep its height below one meter (3 ft.) off the floor.** If there is any instability or shaking or if the heli is out of control, please land at once. The only thing that helps at this stage is to practice and then practice some more.

5. Try to control the VNR 3D using the **smallest possible corrective commands**. The sooner you notice a movement and respond to it, the smaller the corrective measures are required, and the smaller the flying deviation. Be patient as it does take time to learn all the required skills to control the VNR 3D. All successful pilots have mastered the skill of flying through lots of practice.

6. Once your flying time increases and you are capable of controlling your VNR 3D in the air, you can slowly increase its height off the ground. The VNR 3D will become more stable as it is flown a little higher, this is because it leaves its own down thrust turbulence. If you fly the VNR 3D in a small room you may find that after a short time it flies unevenly and unpredictably. This is because the VNR 3D quickly moves the air in the room and creates a turbulent environment, if this occurs land and take a break for a minute, the air will calm down quickly. When you are able to control the VNR 3D smoothly at 3 meters high and can vary the attitude, you are now ready for advanced flying!

7. You might like to try flying the VNR 3D outdoors or set up a flying course to test your skill (set up your flying course with soft material such as cushions so you don't damage the heli if you lose control). **You can also practice with the nose of the heli facing you, just remember that your left and right will now be reversed!** Try these three flying box patterns to practice your advanced flying skills:

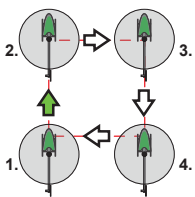
i. With the tail towards you, fly the VNR 3D in a box pattern. Slide the heli sideways, forwards and backwards instead of using the tail rotor to turn.

ii. Repeat the box pattern facing the side of the heli. Practice flying from both sides.

iii. Repeat the box pattern with the front of the heli facing you.

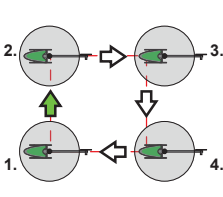
iv. Once you master the box patterns, try flying a figure 8 pattern.

i. BOX PATTERN



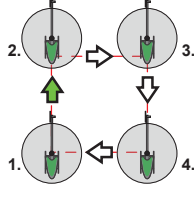
Pilot

ii. BOX PATTERN



Pilot

iii. BOX PATTERN

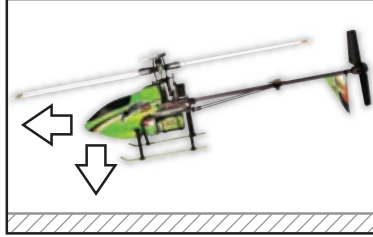


Pilot

Mode I
(Europe/ Australia)

Mode II
(North/South America)

TILT NOSE DOWN AND MOVE FORWARD

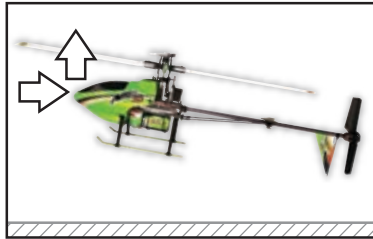


Push Left control stick forward.



Push Right control stick forward.

LIFT NOSE AND MOVE BACKWARDS



Pull Left control stick backward.



Pull Right control stick backward.

SLIDE LEFT WHEN VNR 3D IS FACING YOU



Push Right control stick left.



Push Right control stick left.

SLIDE RIGHT WHEN VNR 3D IS FACING YOU



Push Right control stick right.



Push Right control stick right.



VI. 3D AEROBATIC FLYING

Note: You should master basic flying skills BEFORE attempting 3D aerobatic flying!

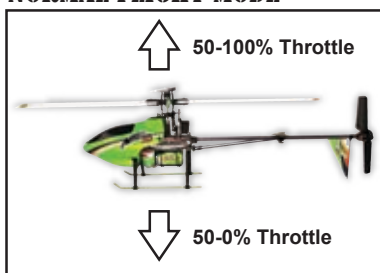
Now that you have mastered the basic flying skills, it's time to learn some aerobatic maneuvers. When learning to fly 3D maneuvers, altitude is extremely important. If a problem occurs, the more altitude you have, the more time you'll have to correct and recover.

3D Flying Mode:

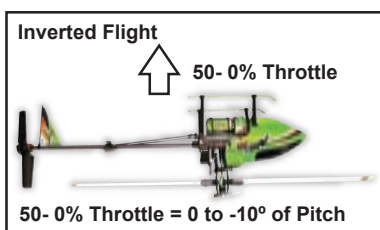
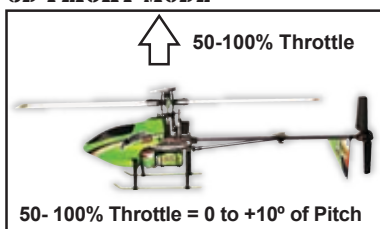
To fly aerobatic maneuvers, the heli must be in 3D Flight Mode. The Flight Mode toggle switch located in the upper right of the transmitter switches between Normal and 3D flight modes (Fig. g). In Normal Flight Mode, the first 50% of the throttle movement is for spooling up the rotor head. As throttle input passes the 50% mark, the CCPM system gradually increases the pitch of the blades to create lift and get the heli into the air. **NOTE: All flying in the Normal Flight mode will occur above 50% throttle. Landing will also occur in the Normal Flight Mode.** In the 3D Flight Mode, the throttle stick function switches from controlling the throttle to controlling the pitch angle of the rotor blades. The VNR 3D must be flying to switch into the 3D Flight Mode so therefore, you should only switch into the 3D Flight Mode when the throttle input is 50% or higher. When the heli is in the 3D Flight Mode, the CCPM system will hold the motor at a constant RPM. The throttle stick is now controlling pitch. At 50% throttle stick, the blades will have 0° pitch (they will be flat). Increasing the throttle input above 50% will add positive pitch to the blades and generate more lift. Decreasing the throttle input below 50% will add negative pitch to the blades and force the heli down when flying upright. Understanding this factor is key to successful 3D flight. There are very few instances where you will use negative pitch while flying upright but when you are inverted, less throttle stick will create more negative pitch, which translates into positive pitch (because you're upside down) and the VNR 3D will gain altitude.



NORMAL FLIGHT MODE



3D FLIGHT MODE



Mode I (Europe/ Australia)



Push Right control stick forward and backward.

Mode II (North/South America)



Push Left control stick forward and backward.



Push Right control stick forward to increase positive pitch.



Push Left control stick forward to increase positive pitch.



Pull Right control stick backward to increase negative pitch.



Pull Left control stick backward to increase negative pitch.

Fig. h Blade Pitch

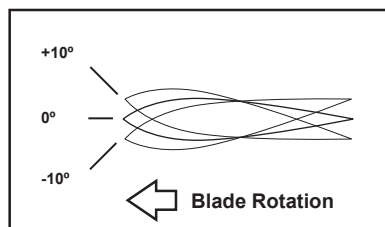
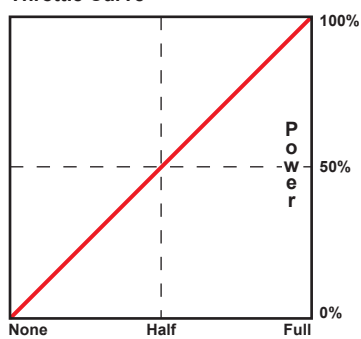
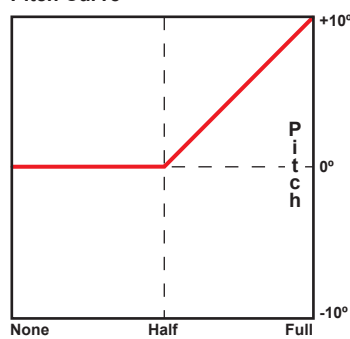


Fig. i Throttle vs. Pitch Curve

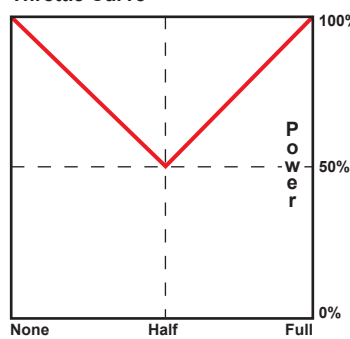
Normal Flight Mode Throttle Curve



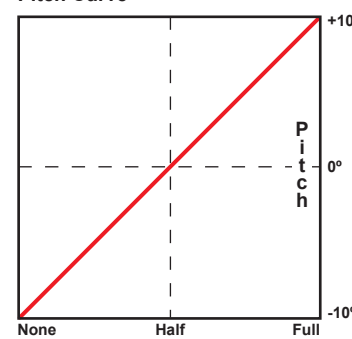
Normal Flight Mode Pitch Curve



3D Flight Mode Throttle Curve



3D Flight Mode Pitch Curve



VI. 3D AEROBATIC FLYING (CONT)

Note: You should master basic flying skills BEFORE attempting 3D aerobatic flying!

3D Maneuvers:

There are many advanced aerobatic 3D maneuvers that you will be able to perform with your VNR 3D as your skill level increases. Until then we'll start with two of the basic maneuvers that start the more advanced tricks.

The Roll:

The first 3D maneuver you should learn is the roll. The illustrations to the right will show you the stick inputs and heli movements needed to perform a roll. Start the roll from Fast Forward Flight (FFF) heading in a down wind direction. If it is your first time performing a roll or any other 3D maneuver, make sure you have plenty of altitude so you can recover if anything goes wrong.

Inverted Hover:

If you want to hover the VNR 3D inverted, use the same stick inputs for the roll but when you get the heli inverted, bring the aileron stick back to its zero position at center and use small inputs of negative throttle (negative pitch) and aileron stick inputs to keep the VNR 3D level during inverted flight. To exit inverted flight, continue the steps used to finish the roll.

The Loop:

The loop should only be attempted after you have mastered the controls associated with the roll. The loop is a FFF maneuver that should be practiced at a higher altitude. Use the illustrations and stick input diagrams shown below to perform the loop.

THE ROLL AND INVERTED HOVERING

<p>Start from Fast Forward Flight (FFF) in 3D mode.</p> <p>Note! Direction is reversed when the VNR 3D is facing you!</p>	<p>Mode I Stick Inputs:</p> <p>Elevator/Rudder 0% 0% Throttle/Aileron +75% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Throttle/Rudder +75% 0% Elevator/Aileron 0% 0%</p>
<p>Add 25% positive throttle and 100% Right Aileron to start rolling the heli.</p>	<p>Mode I Stick Inputs:</p> <p>Elevator/Rudder 0% 0% Throttle/Aileron +25% 100%</p>	<p>Mode II Stick Inputs:</p> <p>Throttle/Rudder +25% 0% Elevator/Aileron 0% 100%</p>
<p>Pull back to 25% negative throttle when the heli goes inverted while keeping 100% Right Aileron to finish the roll.</p>	<p>Mode I Stick Inputs:</p> <p>Elevator/Rudder 0% 0% Throttle/Aileron -25% 100%</p>	<p>Mode II Stick Inputs:</p> <p>Throttle/Rudder -25% 0% Elevator/Aileron 0% 100%</p>
<p>As the heli returns to level flight, bring the Elevator/Aileron input back to 0% and the throttle to +75%.</p>	<p>Mode I Stick Inputs:</p> <p>Elevator/Rudder 0% 0% Throttle/Aileron +75% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Throttle/Rudder +75% 0% Elevator/Aileron 0% 0%</p>

THE LOOP

<p>Mode I Stick Inputs:</p> <p>Stick Input #2 Bring the loop to the top</p> <p>Elevator/Rudder -50% 0% Throttle/Aileron +25% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Stick Input #2 Bring the loop to the top</p> <p>Throttle/Rudder +25% 0% Elevator/Aileron -50% 0%</p>	<p>Mode I Stick Inputs:</p> <p>Stick Input #2 Top of the loop</p> <p>Elevator/Rudder 0% 0% Throttle/Aileron -25% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Stick Input #2 Top of the loop</p> <p>Throttle/Rudder -25% 0% Elevator/Aileron 0% 0%</p>	<p>Mode I Stick Inputs:</p> <p>Stick Input #2 Bring the loop around</p> <p>Elevator/Rudder -25% 0% Throttle/Aileron -25% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Stick Input #2 Bring the loop around</p> <p>Throttle/Rudder -25% 0% Elevator/Aileron -25% 0%</p>
<p>Mode I Stick Inputs:</p> <p>Stick Input #2 Start the loop</p> <p>Elevator/Rudder -50% 0% Throttle/Aileron +100% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Stick Input #2 Start the loop</p> <p>Throttle/Rudder +100% 0% Elevator/Aileron -50% 0%</p>	<p>Mode I Stick Inputs:</p> <p>Stick Input #1 Fast Forward Flight (FFF)</p> <p>Elevator/Rudder 0% 0% Throttle/Aileron +75% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Stick Input #1 Fast Forward Flight (FFF)</p> <p>Throttle/Rudder +75% 0% Elevator/Aileron 0% 0%</p>	<p>Mode I Stick Inputs:</p> <p>Stick Input #2 Finish the Loop</p> <p>Elevator/Rudder -60% 0% Throttle/Aileron +50% 0%</p>	<p>Mode II Stick Inputs:</p> <p>Stick Input #2 Finish the Loop</p> <p>Throttle/Rudder +50% 0% Elevator/Aileron -60% 0%</p>

Wind Direction



VII. BRUSHLESS UPGRADE

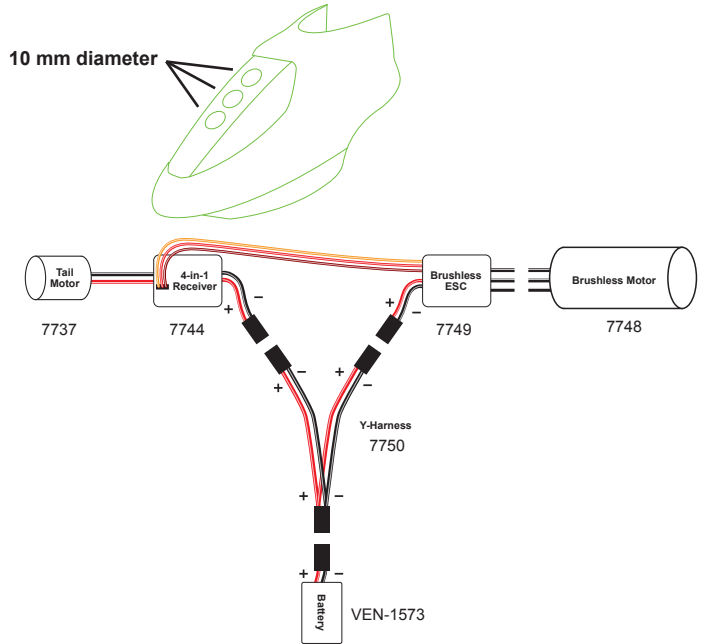
Fig. j Canopy Modification & Brushless Wiring Diagram

Items Needed:

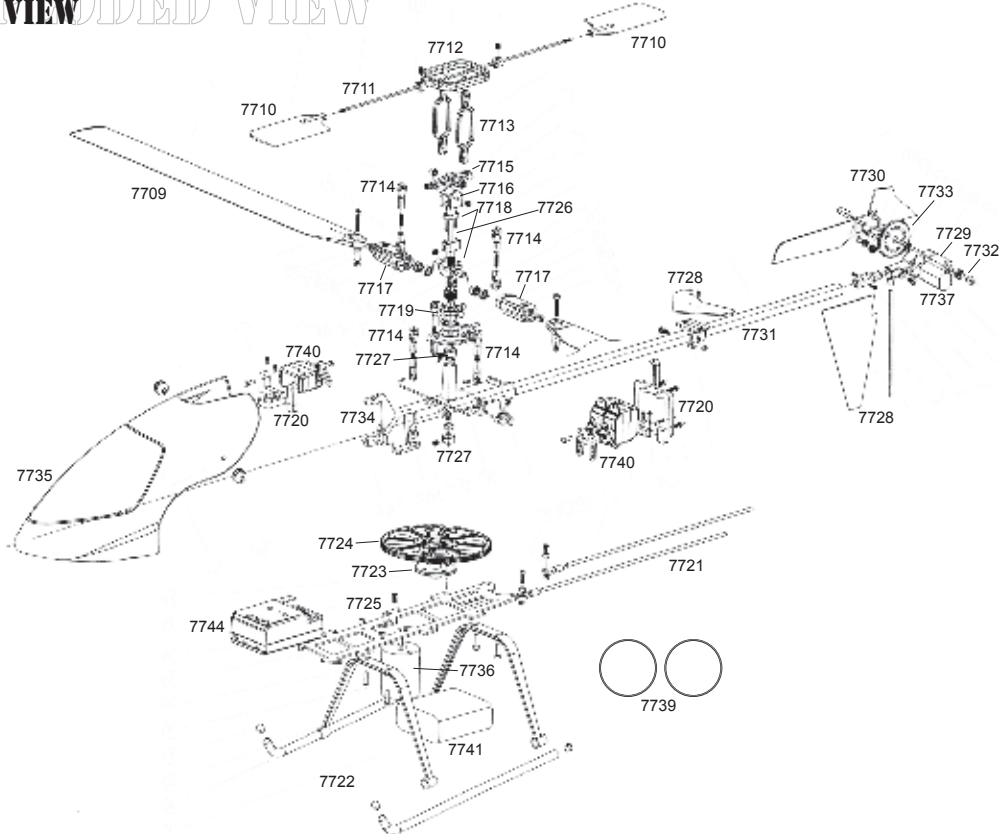
1. Y-Harness - Part # VENF-7750
2. Brushless Motor - Part # VENF-7748
3. Brushless ESC 20 amp - Part # VENF-7749 (25 amp max)
4. LiPO - Part # VEN-1573 (1500mAh max, 3S max, 12.6v)
5. Recommend option part heatsinks - Part # VENF-7747
6. Cooling holes on windshield over 4/1 unit

Setup:

1. Plug Brushless ESC in Ch4 of RX(4/1)
2. Plug Y-Harness to the battery plug for the Brushless ESC and the battery plug for the 4/1 unit
3. Remove the Brushed Motor and replace it with Brushless Motor - Part # VENF-7748
4. Connect the Brushless Motor to the Brushless ESC (Re-zip tie wires)
5. Install the LiPO battery and re-balance the center of gravity of the model
6. Adjust the gyro as needed



VIII. EXPLODED VIEW



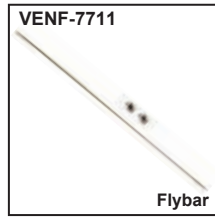
IX. PARTS LIST



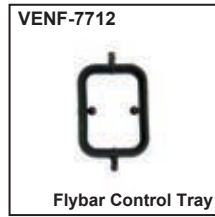
Main Rotor Blades



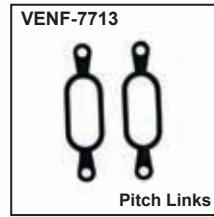
Flybar Paddles



Flybar



Flybar Control Tray



Pitch Links



Pushrod Assembly



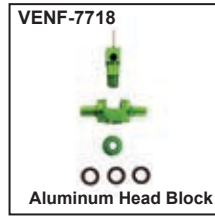
Flybar See Saw



See Saw Holder



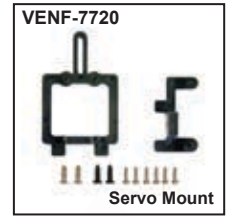
Main Blade Grips



Aluminum Head Block



Swash Plate



Servo Mount



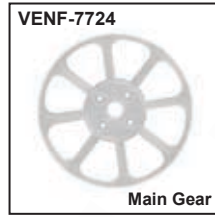
Tail Struts



Landing Gear Set



Alum. Main Gear Hub



Main Gear



Alum. Chassis Plate



Main Mast



Main Mast Collar



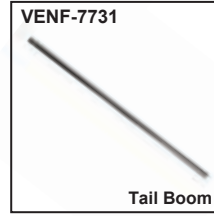
Tail Stabilizer Set



Tail Gearbox Housing



Tail Rotor Blades



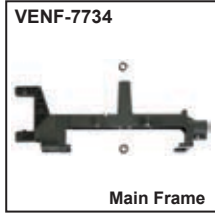
Tail Boom



Tail Rotor Shaft



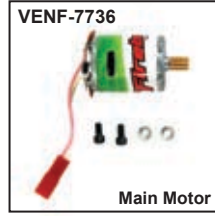
Tail Spur Gear



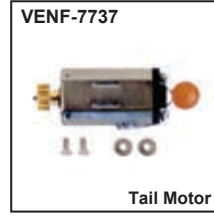
Main Frame



Canopy & Mounts



Main Motor



Tail Motor



Tail Motor Connector



Battery Holder Rings



7.6g Servo



10.8 Volt 9 Cell
650 mAh Battery



Wall Charger



Transmitter



Venom 3D Control Unit

VENF-7745A Crystal Set: Ch.51 72.81MHz FM
 VNF-7745B Crystal Set: Ch.52 72.83MHz FM
 VNF-7745C Crystal Set: Ch.53 72.85MHz FM
 VNF-7745D Crystal Set: Ch.54 72.87MHz FM
 VNF-7745E Crystal Set: Ch.55 72.89MHz FM
 VNF-7745F Crystal Set: Ch.56 72.91MHz FM

VENF-7745G Crystal Set: Ch.612 36.120MHz FM
 VNF-7745H Crystal Set: Ch.618 36.180MHz FM
 VNF-7745I Crystal Set: Ch.622 36.220MHz FM
 VNF-7745J Crystal Set: Ch.628 36.280MHz FM
 VNF-7745K Crystal Set: Ch.634 36.340MHz FM
 VNF-7745L Crystal Set: Ch.640 36.400MHz FM



EASY HIGH PERFORMANCE UPGRADES:



VEN-1573

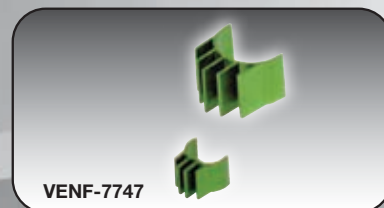


VENF-7748

VNF-7749



VENF-7746



VENF-7747

***LlPo* BATTERY**

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MOTOR & ESC

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HEAT SINK SET

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